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ABSTRACT

This report presents the framework for a legislatively mandated proficiency-based approach to admissions at Oregon's eight public baccalaureate-granting institutions. The goal of the report is to present a systems-level description of why and how a proficiency-based admissions system should operate. Part 1 considers the implications of the proficiency movement and begins with an overview of the events that led to the creation of proficiencies and provides the rationale for the decision. Part 2 reviews related areas including: performance-based assessment, standards development and structure, school reform, and Oregon's approach to K-12 educational restructuring. Part 3 outlines the process used to develop the proficiency areas and indicators and presents the proficiencies. Subsequent sections in Part 3 consider how proficiencies might be assessed, their relation to the Certificates of Initial and Advanced Mastery (CIM, CAM), quality control, and training issues. The report concludes with an outline of an implementation timeline. Appendixes list all sources used in the project, out-of-state contacts, and documents analyzed. (Contains 93 references.) (JB)

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ED 367 213

PROFICIENCY-BASED ADMISSION STANDARDS STUDY (PASS)

Prepared for the
Oregon State Board of Higher Education
January 28, 1994

[as revised February 7, 1994]

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On January 28, 1994, the Board of Higher Education approved the following recommendations based on the Proficiency-based Admission Standards Study (PASS) report:

1. Staff recommends the Board endorse the policy directions of this report, specifically the use of the proficiencies contained in the Standards for a Proficiency-based Admission System for OSSHE and Implementation Plan and Timeline (Sections IX and XIV of the Proficiency-based Admission Standards Study) as the basis for further discussion and refinement with OSSHE campuses, community colleges, K-12 educators, and the Oregon Department of Education.

2. By the May 27, 1994, Board meeting (and meeting of the Joint Boards of Education), staff is requested to return to the Board with a refined set of proficiencies that reflects progress made in articulating the establishing of performance levels and assessments with the Oregon Department of Education.

3. Staff is encouraged to initiate pilot sites for preliminary implementation of the proficiency-based admission standards at high schools that are interested in working with OSSHE in advance of the 1999 full-scale implementation date for Certificate of Advanced Mastery (CAM) programs.

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INTRODUCTION

This report presents the framework for a proficiency-based approach to higher education admissions in Oregon. It results from a mandate from the State Board of Higher Education to develop a list of proficiencies that describe the knowledge and skills students need for admission to Oregon's eight public baccalaureate-granting institutions. The purpose of developing such a list will be to assist the Oregon Department of Education (ODE) as it develops the standards and assessments for the Certificates of Initial and Advanced Mastery (CIM, CAM) mandated in 1991 by House Bill 3565: The Oregon Educational Act for the 21st Century.

The report considers the implications of the movement by higher education to proficiencies, from more traditional measures such as grade point average, Carnegie units, or class standing. It begins with an overview of the events that have led up to the creation of proficiencies, and provides a rationale for such a decision. Additional sections review the state of the art in a variety of areas related to proficiencies, including performance-based assessment, standards development and structure, and school reform nationally and internationally. An example of a performance standard is presented, along with a discussion of the issues that surround performance standard development. Oregon's unique approach to K-12 educational restructuring is presented to familiarize the reader with those elements of the reform program that have implications for the higher education system.

Part III outlines the process used to develop the specific proficiency areas and indicators, then presents the proficiencies. Subsequent sections consider how they might be assessed, their relation to the CIM and CAM, quality control, and training issues. The report concludes with an outline of an implementation timeline.

The goal of this report is to construct a systems-level description of why and how a proficiency-based admission system should operate. The model presented here is meant to serve two purposes: (1) to describe many of the most important implications and elements of a proficiency-based admission system to help inform policy discussion and development; and (2) to anticipate many of the questions that arise when such a system is discussed. The report goes beyond a simple listing of proficiencies although it does contain specifically-stated expectations of the student knowledge and skill necessary for higher education admission. Its goal is to stimulate discussion through the presentation of a model, and to point out the likely implications of such a fundamental shift in policy.

Oregon's attempts to align its higher education and K-12 systems are not isolated ones. The call for serious re-examination of higher education practices is growing. The Wingspread Group's recent report, *An American Imperative: Higher Expectations for Higher Education* (1993), outlines a set of questions those in higher education should be asking about their programs and educational philosophies. Several questions are particularly relevant to this report:

- How are we working with high schools and other educational institutions both to communicate to them the knowledge and skills that students will need to be successful in higher education and to help students meet those requirements?
- In what ways do we work with K-12 systems to enlarge our understanding of their difficulties, encourage teachers and administrators to see us as resources, and enlarge our own competencies?
- In what ways are we assessing learning to diagnose needs and accomplishments?
- How does our institution assure that students have demonstrated a high level of achievement, consistent with our published standards for acquiring both knowledge and skills, as a basis for receiving our degrees or certificates? Can we raise our standards?

The final question is an important one. Do we in higher education know what our standards are, what we mean by an educated person, and what a baccalaureate degree really signifies? The movement to proficiencies as a means of determining readiness for admission eventually leads to a consideration of such issues. This report does not examine or suggest specific changes in higher education. However, the development of admission proficiencies is likely the beginning of a comprehensive process of institutional redesign and not the end point. This report serves to frame this beginning point and to anticipate what lies ahead.

PART ONE:

OVERVIEW AND RATIONALE

I. Overview

This report begins with an overview of the forces that have led to the need to examine current admission requirements for the Oregon State System of Higher Education (OSSHE). This section presents the background, rationale, and purpose for this project. It begins with an overview of school reform in Oregon and of the likely effects changes in public school funding and in the Oregon economy will have on higher education. Next, events leading up to the creation of this project are reviewed and a timeline for this project is presented.

A. School Reform in Oregon

School reform is not a new phenomenon in Oregon. The state has encouraged improvement in its public schools through various legislative programs, most of which have allowed local school districts some degree of latitude in terms of their participation. For example, in 1987 the legislature passed HB 2020, a program that awarded grants competitively to school sites that proposed school improvement programs. During the period of the mid- to late-1980s, the state began mandating more programs. Legislation to require all schools to provide gifted and talented programs is such an example. Common curriculum goals and essential learning skills were identified for all school districts in the mid-1980s. However, on balance, the legislature limited its involvement in local school districts, in part because the state provided only about 30 percent of the funding, and in deference to strongly-established traditions of local control of Oregon schools.

Measure 5 changed the relationship between the state and local school districts when it was passed by the voters in 1990. By limiting local property taxes and shifting the burden for school financing to the state general fund, Measure 5 also effectively shifted control of Oregon's nearly 300 school districts to the state level. With funding comes control. The reluctance of previous legislatures to engage in wholesale mandatory reform of schools vanished quickly in light of the new fiscal relationship. Measure 5, upon its complete implementation in 1996, will require the state general fund to provide approximately 70 percent of school funding.

This shift in funding control combined with heightened concerns regarding Oregon's economic future in the light of major changes in the wood products industry specifically, and all resource extraction industries generally. The anxiety regarding Oregon's economic future created an atmosphere in which the legislature was more willing to entertain significant large-scale change of the public schools if such change could be linked to the state's economic future.

The rapid decline in timber and related wood products industries in the late 1980s and early 1990s signaled a crisis for the Oregon economy. As the timber industry contracted, thousands of so-called "family wage" jobs disappeared. These jobs had been open to workers without high levels of formal education. For the workers who held these jobs, sometimes from generation to generation, their future was clouded. Many were forced to make difficult mid-life readjustments, requiring them to develop skills for new careers. The limits created by their lack of formal education became evident as did the limitations of an educational system that assumed large number of its graduates would never be held accountable to apply much of what they learned.

Simultaneously, the call for a reshaping of the American educational system generally, and secondary education particularly, was being issued in other quarters. Most important and influential for Oregon was the report, *America's Choice: High Skills or Low Wages* (Commission on the Skills of the American Work Force, 1990). Developed by the National Center for Education and the Economy, it offered contrasting futures for the American economy, one in which the United States found itself in competition with Third World countries in the production of low value-added items produced by low-skill workers; the other in which America's economy was built around high-value outputs of goods and services generated by high-skill workers. Education was the crucial variable in this equation. More education equated with higher-skilled workers and higher wages. In this scenario, a highly-educated, highly-skilled workforce was perhaps the only hope for the nation's economic future.

The Oregon Legislature's response to these three forces -- increased fiscal control of schools, economic transition in the state, and national calls for changes in education -- was the passage of landmark legislation designed to restructure the public education system from preschool through postsecondary. Detailed descriptions of this legislation are available elsewhere.[1] This report focuses on the key elements of interest to the state's higher education system -- the Certificates of Initial and Advanced Mastery. These certificates were designed to serve as functional replacements for the high school diploma by creating two sets of performance-based standards which all students would be required to achieve by approximately ages 16 and 18. These standards would be high, geared to

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[1] Detailed descriptions and analyses of the legislation are available from the Oregon Department of Education, 21st Century Schools Council, and the Oregon State School Boards Association.

"world-class" levels, and be demonstrated through "authentic" assessment. Student knowledge and skills would be tested in "real world" settings where they would be applied to complex problems and situations. Student passivity would be reduced. The traditional quality control measures of Carnegie unit, course title, and grade point average would be bypassed by these Certificates and their assessment systems. The traditional structure of discipline-based knowledge would be challenged as well, as students began to demonstrate their mastery in interdisciplinary contexts and assessments.

In an environment where the public education system is changing at a rapid pace, where the legislature has taken a fundamentally different perspective on its relationship to public education, and where education is linked directly to economic productivity, the state system of higher education cannot afford to ignore changes of this magnitude. The framers and implementors of these reforms stated repeatedly that their goal was to raise standards and performance for all students, a goal with which higher education cannot quarrel. While school reform raises more questions than it answers, it is clear that higher education must examine many of its own assumptions and procedures, particularly those related to admissions, in the light of these impending changes in public schools.

The higher education system does not exist separate from the public schools. Colleges and universities will be competing with public schools for general fund dollars much more directly than has been the case. Legislators will expect rational relationships between K-12 and higher education systems so that students can move from one to the other relatively smoothly. Furthermore, there are mounting indications that college admission requirements will not drive the curriculum content and program structure of public schools to anywhere near the same degree they have throughout the 20th Century.

Given this environment of change, the Oregon State System of Higher Education is moving proactively to adapt its practices in ways that are consonant with and supportive of school reform designed to create high standards for all students. By doing so, it is possible to shape the emergence of school reform, to address political concerns regarding the relationship between the two systems, and to validate higher education's claims for state resources and support.

B. Proposal to Articulate CIM and OSSHE Admissions

The gulf between the easily agreed-upon goal of high standards for all and the more problematic issues of specifying these standards in ways that meet diverse educational goals is not easily bridged. Finding means to link the Certificates of Initial and Advanced Mastery with admission into higher education presents certain problems and challenges. The Certificates were designed to respond more to workforce readiness needs than classic academic preparation. While there may be much more overlap between these agendas than many thought initially, there is not complete congruence between them. Therefore, the requirements for the Certificates have not emerged in a form that would allow a student to move unencumbered from public school into a college or university in Oregon.

Responding to this potential discontinuity between the two systems, the Vice Chancellor for Academic Affairs proposed to the Joint Boards of Education in July, 1993, that the requirements for the Certificate of Initial Mastery (CIM) be designed so that upon receipt of their CIM, students would be eligible for admission into an Oregon four-year postsecondary institution. Under this approach, the CIM standards and admission standards would be congruent.

The assumption underlying this proposal was that the level of education needed for both future success in the world of work and entry into higher education were very high and similar. National reports on workplace readiness emphasize the importance of reading, writing, critical and analytic thinking, high quality work, problem solving, mathematical competence, and the ability to understand other languages and cultures.[2] Most of these requirements could be found in an implied, if not explicit fashion, in the admission requirements of most institutions of higher education. Workers of the future would need to be, first and foremost, lifelong learners. What better way to accomplish this than to ensure they had the skills to continue their education at any time if they chose to do so? A linkage of the CIM and college admission would guarantee such an opportunity to all, even those who chose not to continue their education beyond the CIM. They could still attend a college at a later date, based on their CIM.

C. Mandate from the State Board of Higher Education

This proposal (linking CIM to college admissions) was reviewed by the Joint Boards of Education in July 1993. The Boards declined to accept this course of action. The Board of Higher Education then proposed an alternative strategy. The Board requested Vice Chancellor for Academic Affairs Shirley Clark to prepare a list of proficiencies to be transmitted from the State System of Higher Education to the Department of Education. This list of proficiencies would allow the Department of Education to include in the two mastery certificates the proficiencies students needed to be prepared for and admissible to Oregon baccalaureate institutions.

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[2] See for example: Carnevale, Anthony P., Leila J. Gainer, & Ann S. Meltzer (1990). Workplace Basics: The Skills Employers Want. American Society of Training and Development; U.S. Department of Labor, Employment and Training Administration.; Harp, Lonnie (1991). Schools Urged to Revamp Instruction to Stress Workforce Skills. Education Week. 40 (10), 11, July 31; Secretary's Commission on Achieving Necessary Skills (1991, June). What Work Requires of Schools: A SCANS Report for America 2000. U.S. Department of Labor; Conley, David (1993). Roadmap to Restructuring: Policies, Practices, and the Emerging Visions of Schooling. Eugene, Oregon: ERIC Clearinghouse on Educational Management.

However, this task is not as simple as it might appear. The development of proficiencies, while challenging, is not nearly as complex as are all of the policy implications that spring from such a list. Having created this list and authorized the Department of Education to ensure that students have these skills, existing measures of college admission are essentially rendered moot, unless proficiency is defined as a specific score on a test or battery of tests, a requirement that would hardly be in the spirit of the school reform legislation. Students may or may not take courses with approved titles as they do now, since the proficiencies might be learned and demonstrated in any of a number of contexts. Foreign language is a good example of this. Basic competence might be gained as easily from a community-based internship or a well-equipped language lab using CD-ROM technology as from an introductory course. Science knowledge might result, at least in part, from an interdisciplinary project focused on pollution in a local marsh, and be demonstrated in a project or presentation which community members attend and review.

The grade point average (GPA) has much less significance as performance-based assessments become the norm. The general principle behind performance-based learning is that students repeat assessments until they are successful. Therefore, in theory, no student falls below the "proficient" level. There is no "normal distribution" of performance along a continuum from 0 to 100 or "F" to "A." Furthermore, with performance criteria clearly established, there is little rationale for denying admission to anyone who meets those standards, since these performances are deemed to be adequate for admission. Grade point averages, by way of contrast, can be arbitrarily adjusted upward or downward as the demands of the market dictate, since they represent only crude approximations of student performance, and there is little consistency in how they are determined or what student performance they are measuring from teacher to teacher, or school to school. Complaints from admission officers and others regarding grade inflation are reliable indicators that the current system based on GPA creates the illusion of rationality more than it guarantees that students possess the knowledge necessary for success in higher education.

Therefore, in order to fulfill the mandate of the State Board of Higher Education, it is necessary to propose a reconceptualized admission system for Oregon colleges and universities not a marginal adaptation of the existing one.

The chronology on the following page describes the major events involved with the development phase of this proposal. The remainder of this report provides the rationale and methods for such a system of proficiency-based admission.

Table 1
Proficiency-Based Admission Standards: Timeline of Events in Stage I

Date	Event/Activity
July 23, 1993	State Board of Higher Education directs OSSHE staff to prepare list of proficiencies for transmission to ODE.
August, 1993	Staff for Proficiency-based Admission Standards (PASS) Study selected, work plan developed and initiated.
September 15, 1993	All PASS staff working on project. Initial contacts and resource collection begun.
October 21, 1993	Progress report presented to OSSHE Academic Council. Support for conceptual direction and overall structure of project indicated.
October 28-31, 1993	PASS staff attends College Board national meeting on higher education reform to develop contacts, identify other models.
October-November, 1993	Draft report written, contacts pursued, informal meetings held with staff in OSSHE system.
September-November, 1993	Meet with ODE staff periodically to review conceptual framework for model and receive ideas and reactions.
November 18, 1993	Convene Review Panel -- 45-50 higher educators plus a number of K-12 and community college personnel to provide initial reactions to draft.
November 18, 1993	Present summary of Review Panel meeting to OSSHE Academic Council, discuss reactions.
November-December, 1993	Continue redrafting report, incorporate feedback from interested groups.
December, 1993	Consult with all Department of Education staff with major responsibilities for school reform.
December 7, 1993	Provide progress report to State Board of Education.
December 9, 1993	Convene focus groups of higher education staff to develop extended definitions for all proficiencies.
January 7, 1994	Convene higher education staff to develop proficiency indicators for all proficiencies.
January 28, 1994	Present report to State Board of Higher Education (with provisions for review by State Board of Education).
January 28, 1994	Present report and action by Board of Higher Education to affirm policy direction to the Joint Boards of Education.

II. Rationale for Considering Changes in Higher Education Admission Standards and Procedures

A. Limitations of Current Admission System

It is important to note that the rationale for rethinking the existing admission system is not based solely on the reforms in public schools. In fact, there are serious flaws and limitations inherent in current admission strategies.

While it may be true, as many in higher education lament, that many students arrive unprepared for the demands of college and university study, the fact remains nonetheless that these are the students who have been selected and admitted using the current admission system. This admission system is familiar to all, and is certainly rationalized (if not rational). The idea of changing this system is discomforting to many people. However, it may be reasonable and useful to examine the performance of students admitted using this system at least as a partial indicator of the effectiveness of current procedures. The point here is not that the admission system necessarily causes poor student performance, merely that it is unlikely that much improvement in performance is likely to occur as a result of tinkering with current admission procedures and models. It is also worth noting that the current admission system is often used as a reason by high school faculties not to change their practices, thereby creating a vicious cycle where the act of raising standards simply leads to more of the same curriculum and instruction that has failed to prepare students adequately under the old standards.

Data from the Office of Institutional Research Services, OSSHE, provide some insights regarding the readiness of entering freshmen for college-level mathematics and writing, and the persistence of students in completing an undergraduate degree within six years of entry into the institution. These data suggest that the existing system, based on Carnegie units, course title, grade point average, and class standing (combined with SAT and other measures), does not result in the uniform selection of students who perform at minimally acceptable levels in key performance areas such as math and writing.

Systemwide, an estimated 42 percent of entering freshmen at Oregon four-year institutions would need to enroll in remedial mathematics courses (courses below Math 105 or 111) if they chose to take a mathematics course, while 27 percent of entering freshmen would need to enroll in remedial writing courses (courses below Writing 121).

Completion rates at four-year higher education institutions in Oregon also suggest that current admission strategies have limitations and might be seriously flawed. While the reasons students choose to discontinue their education at a particular institution are complex and diverse, it is not unreasonable to examine those rates as one dimension for determining the effectiveness of current admission practices. The OSSHE Institution Reports dated July 1993, indicate that for 1990, 56.4 percent of high school graduates in Oregon enrolled in two or four-year colleges the fall term following graduation from grade twelve. Four OSSHE institutions reported six-year graduation rates (i.e., the percentage of fall 1986 entering first-time, full-time freshmen at an OSSHE institution who completed their undergraduate studies at the same institution and were awarded degrees in any subsequent year through 1991-92): University of Oregon (UO), 54 percent; Oregon State University (OSU), 52 percent; Portland State University (PSU), 23 percent; and Oregon Institute of Technology (OIT), 39 percent.

These results suggest that between 46 and 77 percent of students enrolling in OSSHE institutions either: transfer to another in- or out-of-state institution to complete their first undergraduate degree; take more than six years of full- and part-time study to complete a baccalaureate degree; or fail to complete a baccalaureate and leave higher education for a number of reasons.

Current persister rates -- the percentage of students still enrolled in the fall of 1992 who had entered the institution as first-time, full-time freshmen in fall 1991 -- show a similar trend at three regional colleges: Eastern Oregon State College (EOSC), 54 percent; Southern Oregon State College (SOSC), 62 percent; and Western Oregon State College (WOSC), 63 percent. The figures indicate that for these three OSSHE institutions, between 37 and 46 percent of students leave full-time studies (for a variety of reasons) after only one year.

These persister and completion rates suggest that it might be in the best interests of OSSHE institutions to rethink current assumptions regarding the standards employed for admission, since these requirements heavily influence the structure and content of the high school instructional program.

B. Pressures for Change in Higher Education

The forces operating to bring about changes in both higher education admissions practices and instructional programs mirror those faced by public schools in many important ways. Both need to respond to the atmosphere of fiscal crisis spawned by Measure 5 and the resulting decreases in property tax support for public schools. This shift of school funding to the general fund without a concomitant increase in revenue portends major changes in organizational structure and programmatic content for all educational institutions in the state.

1. Changes Occurring in Higher Education as a Result of Measure 5

With the increasing demands that the K-12 system will place on the general fund, it is clear that higher education must examine its practices and consider change not incrementally but systemically. There will likely be increased pressure for higher education to demonstrate how it links to the K-12 system, not vice-versa. The state's economic development strategy implicitly depends on the K-12 system preparing students better. Higher education, while important, is not presently at the center of this strategy.

2. Productivity Issues

During the last session of the legislature the issue of the productivity of the higher education system in Oregon was raised frequently and forcefully. Figures such as those cited previously indicating low graduation rates and long periods of time to graduation contributed to a legislative perception that tax dollars were not being utilized as effectively as they could be.

The legislature charged the State System of Higher Education with improving productivity. Numerous strategies are being explored currently at all campuses. One of these is the notion of accelerated admission and graduation. While this strategy has several components, the idea has been labeled the "accelerated baccalaureate."

The accelerated baccalaureate is a tool for increased productivity primarily because it creates a system in which a student can move more quickly to graduation in fewer than the usual four years. While there are many different elements to this strategy, some requiring changes in higher education structure and practices, the dimension of greatest interest here is the notion that students could earn significant amounts of college credit before entering higher education.

In this approach, students would be able to earn college credit at their high schools or by taking some classes at a college or university before matriculation. In fact, in many cases students would be involved in a gradual transition from high school to college rather than an abrupt relocation. The Postsecondary Options program in Minnesota is an example of this approach. The University of Minnesota has approximately 150 high school-age students taking classes on campus, and offers classes for college credit to an additional 1,250 students at their home high schools. Strict quality control measures are in place to ensure that this credit meets university standards.

Some of the elements of such an approach are already in place in Oregon. From a productivity point of view, these programs would need to be increased dramatically so that they become the norm rather than the exception. Clearly, quality control issues would top the agenda when such programs were being expanded. However, a performance-based approach in which students must meet externally-developed performance levels can help alleviate abuses that can result when high school teachers must grade their own students with few concrete performance standards.

Considerations of productivity also call into question practices such as requiring college freshmen to take introductory courses in areas such as foreign languages and the sciences, even though they have taken introductory sequences in high school. The assumption that students learned or retained little in high school and must be taught again "from scratch" to ensure that they learn it correctly, represents a waste of resources that legislators find particularly difficult to understand. Such practices also support lax student attitudes toward learning. Students take a cynical view of courses in which they are being asked to "learn" what they already know.

Proficiency-based approaches to admission are appropriate tools in such an environment, to help ease the transition between institutions and eliminate the need for students to relearn material they have already mastered.

3. Implications of School Reform in Oregon for Admission Procedures

The Certificates of Initial and Advanced Mastery are to be based on student demonstrated performance of specified skills and knowledge. They reject the notion of seat time and credits as organizers of, or proxies for, learning. Students who pass through the Oregon schools will be assessed on their demonstrated knowledge and will come to think of learning in such terms. Furthermore, transcripts are unlikely to look as they do today. Course titles will have less meaning. More interdisciplinary learning seems likely as students work on projects that span more than one discipline. The length of classes might vary tremendously, thereby affecting the number of Carnegie units assigned to each, which in turn affects student accumulation of the required number of credits. More opportunities for students to "challenge" courses or demonstrate proficiency in ways other than course attendance seem likely.

How will Oregon's colleges and universities respond to these changes? In many other states, higher education institutions have responded with suspicion and resistance to such changes. In these states, battles are shaping up between higher education admission officers and high school reformers. Simultaneously, an increasing number of states are attempting to move toward "seamless" systems of education, from preschool through postsecondary programs. When higher education admission requirements are perceived to be barriers to such seamlessness and to school reform, they will likely be examined much more closely. The rationality and efficacy of current admission practices will be subjected to closer scrutiny. Many state systems of higher education will need to decide soon whether to use school reform as an opportunity to develop admission standards and procedures that further the goals of higher education, or whether to engage in a protracted, contentious fight to defend current admission practices, thereby implying that those procedures produce students with the skills necessary for success in higher education. Oregon, with its demands for productivity, seamlessness, and improved student performance, seems likely to be one of the arenas where those in higher education will need to make such a decision sooner rather than later.

PART TWO:

STATE OF THE ART IN SCHOOL REFORM, PERFORMANCE STANDARDS AND ASSESSMENTS, AND PROFICIENCY-BASED ADMISSIONS

III. State of K-12 Reform

The following section presents a summary of key issues in K-12 education reform as they relate to higher education. It is worth repeating a point made in the introductory that although this section discusses changes in K-12 education, the call for serious re-examination of higher education practices is beginning to be heard as well.

A. K-12 Reform Nationally and Internationally

1. Workforce Readiness versus Academic Preparation: False Dichotomy?

Vickers (in press) in her examination of the strategies for workforce preparation employed by Germany, France, Great Britain, Australia, and the United States, reached the following conclusions:

> *First, [that] educational pathways designed exclusively to prepare students for work are becoming less and less popular, as evidenced by the increasing proportion of students in most European countries who are seeking to remain within the academic mainstream. Second, [that] generic work-readiness competencies are valuable both for students entering higher education, and for those seeking direct employment after graduation.* (p. 33-34)

Her conclusion is that it makes sense to integrate work-readiness assessments into the curricula normally required for high school graduation. It is important to distinguish between **work-preparation** skills and **work-readiness** skills. Her definition of work-readiness skills includes attributes such as initiative, self-management, cooperative work, adaptability, reflection/evaluation, and communication. These attributes illustrate the fact that "work-readiness" standards have moved from the old work-preparation notion of specific skills and job-related competencies to generic characteristics and habits.

There is considerable overlap between these characteristics and those needed by a student to succeed in higher education. There may be an opening window of opportunity in which it is possible to develop proficiency-based assessments that acknowledge and build upon this overlap between the needs of the workplace and the needs of higher education. While these needs are not now completely congruent, and are unlikely to be so anytime soon, there may be a larger common core than existed in the days of vocational education.

Conley (1993) describes this phenomenon in slightly different terms when he compares the current congruence between the business community's stated needs and those of progressive educators. He suggests that both groups tend to advocate the following ideas:

- *Curriculum that moves from a primary emphasis on rote learning and factual information to a greater emphasis on problem solving, application, and integration of knowledge and higher-order thinking.*

- *Students who are actively engaged in learning, who are not being trained simply to do what they are told.*

- *Learning that is best assessed in terms of outcomes not processes; the inadequacy of seat time as the primary means to demonstrate mastery; the ability to apply or demonstrate a skill or set of knowledge as the best way to assess whether learning has really occurred.*

- *Education that extends beyond the walls of the classroom; students who apply knowledge and acquire new skills, information, and insights in the larger community.*

- *Teachers who facilitate learning, not control it; one of the key goals of education being to create lifelong learners, to develop a student's learning skills, not merely to transmit a body of information in a way that leaves the student with negative attitudes about learning.*

- *The belief that each learner is valuable; no "expendable" students; students who have positive self-images and the ability to define goals for themselves.*

- *"Process" skills considered as important as knowledge of specific content.* (pp. 41-42)

B. State of K-12 Reform in Oregon

After the passage of HB 3565 in June of 1991, the Department of Education initiated a process to design the various components mandated in the Act, most notably the Certificates of Initial and Advanced Mastery.

The Department of Education constituted ten Task Forces in December 1991. These Task Forces developed recommendations that were transmitted to the State Board of Education in preliminary form in August 1992. Final recommendations came to the Board in December 1992. In its response to the Task Force reports, the Board emphasized its:

> *. . . commitment to the principles of outcome-based education. In an outcome-based educational system, the state establishes a core set of expected outcomes or results from schooling, but permits school districts and schools, within reasonable limits, to develop their own ways of reaching those outcomes on the assumption that there is no single best way to educate young people and that local innovation and diversity should be encouraged.* (Oregon State Board of Education, 1993)

Development of a statewide framework of expectations and standards continues, as the Department of Education works to design the assessment system that will enable this outcome-based model to function effectively. The Department has also sponsored a series of pilot programs at school sites to help create examples of these concepts. School districts are challenged to design programs at the local level that meet the goals of the Act. Schools can be expected to look different, based on the needs of their students and the best strategies the school can employ to achieve the goals of the Act.

C. Emerging Pilot Projects at Oregon High Schools

The Oregon Department of Education is sponsoring pilot programs of two different types. One program is designed to develop the six "strands" of the Certificate of Advanced Mastery and components of the Certificate of Initial Mastery. The other engages a group of schools in a network to develop new assessment techniques and tasks to support these certificates. Additional pilot sites will be initiated during this school year. The following subsections provide brief descriptions of some of these demonstration projects.

1. CAM Developmental Sites

The Department of Education is sponsoring a series of developmental sites where elements of the CAM and CIM are being developed. Funded by the Office of Professional and Technical Education, these sites have undertaken a range of activities to help define and operationalize the CAM. Some examples of activities at each site follow:

a. Cottage Grove High School, South Lane School District

Cottage Grove High School has developed its CIM program extensively, and will award its own version of the CIM. Students create and present their own portfolio to a board of review, consisting of a student, faculty advisor, parent, advocate, and CAM strand representative. The portfolio is a history and reflection of the student's actions, accomplishments, attitudes, and decisions in the CIM program. It includes a collection of the student's best work that shows mastery of each CIM outcome. Rubrics are used to assess each required piece in the master portfolio. To earn a CIM, students must demonstrate that they are effective communicators, quality producers, constructive thinkers, self-directed learners, involved citizens, and collaborative contributors. This year the school will begin to work on their CAM program through the development of student exit outcomes based on CAM skills and standards, inclusion of career development and technology education, school to work programs, and joint ventures with the local business community.

b. Crater High School, Central Point School District

Crater High School has several years of school redesign experience, in addition to its involvement as a development site. Its site council has been in existence for four years. Over the past several years several schools-within-a-school have been developed. The Business school is one example. Classes throughout Crater High are 90 minutes in length on alternating days. There are extensive technology labs and on-site student-run businesses, including a school branch of the First National Bank, an employment agency for students, a computer store, a music consignment store, and a graphic arts department. Crater proposes to increase its emphasis on professional technical education, and to provide more business partnerships and shadowing experiences.

c. David Douglas High School, David Douglas School District

The STARS (Students Taking Authentic Routes to Success) program is one of David Douglas' major reform efforts. The program consists of six constellations or career paths which include: Arts and Communications; Environmental, Physical and Health Sciences; Hospitality and Recreation, Marketing and Business; Production Technology; and Social and Human Services. The entire student body is placed into one of these constellations. David Douglas has also developed a CAM strand focused on law-related careers. In this strand, an interdisciplinary team composed of a law teacher, a psychology/sociology teacher, two English teachers, a counselor, the professional technical coordinator, and the career coordinator design a program that involves on- and off-campus experiences including interdisciplinary curriculum and observations in courtrooms. In addition, this year the school will work to integrate academic and professional technical education, and to create an additional strand, possibly pre-engineering. The school will increase the number of applied academics courses, and work closely with Mt. Hood Community College and the local Workforce Quality Council.

d. North Coast Educational Consortium, Clatsop Educational Service District

The Consortium consists of seven high schools from six school districts in the northwestern portion of Oregon. This consortium will develop a Natural Resources CAM strand. A prototype program, the Coastal Studies and Technology Center, has been implemented at Seaside High School. A career awareness course, Cruise, has been implemented for freshmen. This course will explore the six CAM career pathways.

e. Roosevelt High School, Portland Public Schools

Roosevelt has developed six Career Pathways. This year the school will focus on integrating academic and professional technical programs, offering applied math, biology, chemistry, and principles of technology. Job shadows and youth apprenticeships will be emphasized over the next two years. Roosevelt has already built partnerships with over 150 businesses. During the 1992-93 school year between February and June, 251 freshmen shadowed business volunteers. This number represents 93 percent of the freshman class.

f. Willamette High School, Bethel School District

Willamette High School is designing CAM strands in Business Management and in Industry and Technology. Willamette has already integrated applied communications into its ninth grade curriculum, piloted a workplace readiness curriculum, developed CIM outcomes, and piloted block programs for the ninth grade. Willamette has established interdisciplinary teaching teams in business management and industrial technical education, and established outcomes for the business management strand with local business partners. The school is expanding its resource bank of potential work experience sites, requiring job shadowing as a part of the career exploration curriculum, and placing five students in youth apprenticeships in a state pilot program.

2. SPAN Network Sites

The Student Performance Assessment Network (SPAN) was established to develop the assessments to support the CIM and to identify issues that teachers, schools, and districts encounter as they attempt to implement the CIM. This project is being undertaken by a network of schools in six districts: Corvallis, Eugene, Dayton, Central Point, Lake Oswego, and Reynolds. Teachers and site administrators meet regularly with ODE staff and consultants to review materials related to performance assessment, and to design assessment tasks which teachers then attempt in their classrooms.

During the 1992-93 school year, teachers in these districts developed assessments to determine student performance on CIM outcomes, and on benchmark outcomes at grades three, five, and eight. These schools also share their results and experiences with one another, and, eventually, with other educators in the state.

IV. The State of the Art in Performance Standards

There are two keys to a performance-based system: the performance standards and the assessments.

This section examines the concept of performance standards, placing this notion in a national context first, then briefly describing state efforts.

A. National Goals

The movement to develop national educational goals that specify desired knowledge and skills has been swift and unprecedented. Historically, authority for education policy has resided primarily with the states, and any hint of federal standard-setting has been greeted with suspicion and hostility. Federal influence at the school site level has increased during the past 30 years, but it has focused on addressing equity issues primarily. Three important pieces of legislation -- the Elementary and Secondary Education Act, (ESEA), Title IX, and the Education for All Handicapped Citizens Act, (P.L. 94-142) -- serve as the best examples of this policy. This legislation established a federal presence in school districts and school buildings that had never before existed in this country. These laws tended to address the needs of particular groups of students; they did not attempt to set an agenda related to the content matter learned and performance level demonstrated by all students.

Previous federal intervention relating to content areas occurred in the late 1950s and early 1960s with government sponsorship of large-scale curriculum development projects, particularly in mathematics and science. These programs were, however, voluntary and were simply made available to states and districts to use as they saw fit. Examples include Jerome Bruner's *Man: A Course of Study*, the Comprehensive School Mathematics Study project, and the Biological Sciences Curriculum Study.

The federal role began changing in the 1980s with increased attention to public education after the publication of *The Nation at Risk* in 1983. This movement increased, culminating in 1989 when the nation's governors (led by then-Governor Bill Clinton of Arkansas, in conjunction with the Bush Administration) identified six National Educational Goals. These formed the basis for the *America 2000* program which was unveiled in April 1991. Of the six goals, two laid the groundwork for the development of national educational standards:

> *Goal 3: Student Achievement and Citizenship*
> *By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.*
>
> *Goal 4: Science and Mathematics*
> *By the year 2000, U.S. students will be first in the world in mathematics and science achievement.* (National Council on Education Standards and Testing, 1992)

These goals provided a framework within which the development of national education goals could take place. Several groups were constituted to facilitate the movement toward clearly-delineated national goals. The National Council on Education Standards and Testing (NCEST) was created:

> *. . . in response to interest in national standards and assessments by the Nation's Governors, the Administration, and Congress. In the authorizing legislation (Public Law 102-62), Congress charged the NCEST to:*
>
> - *advise on the desirability and feasibility of national standards and tests, and*
>
> - *recommend long-term policies, structures, and mechanisms for setting voluntary education standards and planning an appropriate system of tests.* (p. 1)

The National Education Goals Panel (NEGP) was established to monitor the nation's progress toward the six goals. The report, *Raising Standards for American Education*, was released by NCEST in January, 1992. This report clearly recommended national standards and assessments:

> *In its first year, the Panel concluded that to meaningfully measure progress on Goals 3 and 4, consideration should be given to creating national education standards that define what students should know and be able to do and to identifying and developing methods to assess students' success in meeting them. The President similarly called for the creation of World Class Standards for students and high-quality tests on which they can demonstrate achievement of these standards.* (pp. 1-2)

The NEGP outlined the basic principles that a program of national standards should follow. Standards were critical to promote educational equity, preserve democracy, enhance civic culture, and improve economic competitiveness. Further, such standards would serve to provide an increasingly diverse and mobile population with shared values and knowledge. National standards should have the following characteristics:

- *reflect high expectations, not expectations of minimal competency.*
- *provide focus and direction, not become a national curriculum.*
- *be national, not federal.*
- *be voluntary, not mandated by state government.*
- *be dynamic, not static.* (p. 3)

Based on NEGP's recommendations, the U.S. Department of Education in cooperation with private foundations funded a number of national groups to develop standards in various content areas. The funded projects were in science, geography, history, civics, English, arts, and foreign languages. Each is discussed in greater detail in this report.

In October 1992 then-presidential candidate Clinton wrote that "world class standards" were his first educational priority. As noted above, Clinton was one of the leaders of the conference that adopted the six education goals in 1989, and his educational program, *Goals 2000: Educate America Act* (Pitsch, 1993), recently passed by the House, still contains many of the elements of the *America 2000* program, including the emphasis on national standards and assessments.

The *Goals 2000* legislation will continue funding for the NEGP and add two new agencies, the National Education Standards and Improvement Council (NESIC) and the National Skills Standards Board (NSSB), the latter to be involved with occupational standards. The legislation calls for voluntary standards and will provide funds for grants to states and districts. States will be required to submit plans for developing state standards to be eligible for federal funds. Additionally, the legislation will incorporate a seventh goal calling for parental participation.

B. National Groups/Organizations Involved in Standard-Setting

A number of educational organizations have launched projects in response to the new federal interest in content-based standards. The organizations listed below have projects designed to set standards for K-12 education. Each group has used some substantive consensus-building process as part of its standards project. Most often standards are grouped into three categories: Kindergarten through grade four, grades five through eight, and grades nine through twelve. Many of the groups below were funded after the publication of *Raising Standards for American Education* (1992) previously discussed.

1. Mathematics

National Council of Teachers of Mathematics (NCTM). This organization has set the precedent for establishing national standards (Romberg, 1993). Its work is frequently cited as the model for other organizations to follow. The NCTM established the Commission on Standards for School Mathematics in 1986 which was responsible for the actual development of the math standards. After substantial public discussion, the math standards were published in 1989 (National Council of Teachers of Mathematics, 1989). In 1988 work began on a document designed to address teaching standards, which was completed three years later (National Council of Teachers of Mathematics, 1991). A draft document that delineates assessment standards is currently under review.

2. Science

National Research Council (NRC). This organization is the principal operating agency of the National Academy of Sciences (NAS), and its work on standards has been funded by the U.S. Department of Education. To date, draft documents have been produced regarding standards (National Research Council, 1993b) and assessments (National Research Council, 1993a). This group has been the only one to produce a document that specifically addressed teacher preparation in its content area. The report is entitled, *A Nationwide Education Support System for Teachers and Schools* (National Research Council, 1993c).

American Association for the Advancement of Science (AAAS). *Science for All Americans* (Rutherford & Ahlgren, 1989) addressed only standards after students had left school. A new book titled *Benchmarks for Science Literacy* (American Association for the Advancement of Science, in press) promises to present detailed standards for high school-level science. This organization has funded its projects independent of the U.S. Department of Education.

National Science Teachers Association (NSTA). This organization likewise was not funded by the U.S. Department of Education. Two books have been published by NSTA, both under the title *Scope, Sequence, and Coordination of Secondary School Science.* Volume I addresses core content (National Science Teachers Association, 1992a) while Volume II looks at relevant research (National Science Teachers Association, 1992b).

3. Social Sciences

The first three projects that follow were funded by the U.S. Department of Education. The fourth project, sponsored by an organization of social studies teachers, was funded independently. Each organization has completed draft documents: National Center for History in the Schools (1993); National Council of Geographic Education (Geography Education Standards Project, 1993); Center for Civic Education (1993); National Council for the Social Studies (1993).

4. English

The Standards Project for English Language Arts. This project is a collaboration of the Center for the Study of Reading (CSR) at the University of Illinois, the International Reading Association (IRA), and the National Council of Teachers of English (NCTE). Their initial draft document has just been released (Standards Project for English Language Arts, 1993).

5. Writing

Numerous organizations have established rubrics and other scoring strategies for evaluating writing. The College Board has devised a writing service as practice for the writing portion of the new SAT II (College Board, 1993c). This service, which is administered at the school level, includes detailed instructions on administering as well as scoring the writing sample.

6. Foreign Language

National Standards in Foreign Language Education. This is a joint project of the American Council on the Teaching of Foreign Languages (ACTFL), the American Association of Teachers of French (AATF), the American Association of Teachers of German (AATG), and the American Association of Teachers of Spanish and Portuguese (AATSP). French, German, Spanish, and Portuguese will be the initial focus of the standards. This project is the last to be funded by the U.S. Department of Education and thus has just begun its efforts (1993a).

7. Music, Dance, Art

Consortium of National Arts Education Associations. Four organizations, the American Alliance for Theater & Education (AATE), the Music Educators National Conference (MENC), the National Art Education Association (NAEA), and the National Dance Association (NDA) are members of this consortium. Its first draft document was recently completed (National Committee for Standards in the Arts, 1993).

8. Physical Education

National Association for Sports and Physical Education (NASPE). This project has not yet produced a draft document.

9. New Standards Project (NSP)

The NSP is a joint venture of the Learning Research and Development Center (LRDC) at the University of Pittsburgh and the National Center on Education and the Economy (NCEE) (O'Neil, 1992). This project is not federally funded. It receives funding from private foundations, most notably Pew Charitable Trusts and the MacArthur Foundation. In the summer of 1992, these foundations extended their initial support of $2.5 million by making available an additional $8.5 million to the project. Nineteen states and six school districts are members of the project (Resnick & Nolan, 1993).

The project is working to develop assessments that can be used by states and national groups that are developing performance standards. The project believes changing the way children are assessed will have a major impact on curriculum and instruction (O'Neil, 1993). The New Standards Project is an outgrowth of the Commission on the Skills of the American Workforce, which wrote the 1991 report, *America's Choice: High Skills or Low Wages!*

The New Standards Project is working to create a performance-based assessment system based on world-class content and performance standards (Simmons & Resnick, 1993). Goals for the NSP are to identify a range of tasks that can serve as the basis for performance-based assessment and to create rubrics and procedures for scoring students' work reliably and fairly. The focus of the NSP is on the three P's -- performance tasks, projects, and portfolios. Portfolios will be the heart of the assessment system. One of the projects assessments was included among 70 tasks administered to 50,000 fourth and eighth graders in 18 states and six urban school districts as part of a pilot examination in mathematics and English (Plattner, 1993).

The NSP will also focus on professional development for effective use of the three P's and is working to design appropriate activities for teachers. Another goal of the project is to develop international benchmarks (New Standards Project, 1993; Resnick & Nolan, 1993). This would enable states and school districts to compare their instructional program and student performance to international standards. Performance levels and assessments would be benchmarked to those countries noted for excellence in their public education and which are in economic competition with the U.S.A. Benchmarking is intended to clarify what is expected of students, the level of performance needed to demonstrate competence.

The effort required for international benchmarking is substantial. The resources available to NSP for international benchmarking are not yet determined although staff members of the project are actively working in this area. The New Standards Project has expressed interest in the PASS project and is willing to share resources around the topic of "world-class standards." One possibility is a conference that assembles representatives from all organizations or projects who are attempting to define this concept to enable them to coordinate their efforts. PASS staff will remain in contact with NSP to encourage such a conference.

10. National Assessment of Educational Progress (NAEP)

This organization has been providing national educational data based on large-scale sampling assessments since the 1960s. *Raising Standards for American Education* recommends that the NAEP play a role in a dual assessment system, looking at both individuals and large-scale samples (National Council on Education Standards and Testing, 1992; ONeil, 1992).

C. State Efforts

Numerous states are making efforts to establish state standards through curricular efforts and other projects. States that select textbooks, in essence, are already establishing standards on a de facto basis. Maine and Virginia are implementing common core curricula (Bradford, 1993; Gaidimas, 1993). Vermont has established a statewide performance-based assessment system. Kentucky is another state using a state assessment system to effect changes in standards and performance (Wiske & Levinson, 1993). California has put substantial effort into developing curricular frameworks (Mathematics Curriculum Framework and Criteria Committee, 1992; Science Curriculum Framework and Criteria Committee, 1990). Minnesota has developed outcome statements and is moving to develop detailed definitions of them (Minnesota Department of Education, 1991). Pennsylvania, after a stormy and controversial process, adopted statewide outcomes (Pipho, 1992; Rothman, 1992).

The PASS staff has been conducting telephone interviews with officials from all the state departments of education in the nation. In addition to the state efforts already mentioned, other states are in various stages of reacting to national calls for curriculum and assessment standards, among them New York, Washington, Montana, Idaho, and Alaska.

According to Dick Crowley, Office of District Superintendents for the State Education Department of New York, joint efforts with Columbia University to modify curricula and publish a series of educational outcomes for New York State are well underway. What he called the "Compact for Learning" began about three years ago. It delineates the state's role as deciding what the standards are while delegating more flexibility to local schools to decide how day-to-day activities should be structured to guarantee that students meet those standards. This delineation of responsibilities is echoed in the efforts of other states as well.

John Anderson, Coordinator for 21st Century schools in Washington and Director of the Center for Improvement of Student Learning (phone interview, November 1, 1993), suggested that alternative assessment is a key theme for policy planners there in many joint planning efforts. The Washington Legislature recently included the need to establish standards and clear outcomes/goals for students in an "Engrossed Substitute House Bill 1209" passed on April 25, 1993.

Moreover, colleges and universities are beginning to become involved in the discussions on alternative assessment. The neighboring states of Montana and Idaho are moving to the use of performance-based assessments and standards. Montana held a teleconference in August 1993 in which approximately 100 schools participated in a discussion on standards. In the same month, Montana's Office of Public Instruction published, *Montana School Accreditation: Standards and Procedures Manual*, a document meant to "move toward standards which are qualitative as well as quantitative" and that "empower" local school districts to define curricula to meet the standards (Montana Board of Public Education, 1993, p. 1). Idaho also published a working draft entitled *Performance Based Education: Education Reform in Idaho Schools for 2000 and Beyond* (Idaho State Department of Education, 1993). Like Washington and Montana, the key theme is assessment based upon a student's ability to perform, or to actually demonstrate identified skills and knowledge in various disciplines.

Alaska has also begun discussions on standards. Committees representing English/Language Arts, Mathematics, and Science met and compiled their standards in three reports for *Alaska 2000* sponsored by the Department of Education (Alaska Department of Education, 1993a; Alaska Department of Education, 1993b; Alaska Department of Education, 1993c). Alaska's standards are laden with mastery of process outcomes such as problem-solving and effective collaboration with peers. Their reports imply that such processes are as significant as content outcomes, possibly more so.

Clearly, Oregon is not alone in an agenda for change. Some states like Texas and Alabama, have made less radical changes. Although Texas (Texas Education Agency, 1992) has implemented a statewide assessment system that permits a qualitative explanation from student test-takers, students and teachers might rely on the multiple choice format that dominates the assessments. Alabama highlights how reform efforts may be sabotaged by a lack of community support. According to Gloria Turner, State Department of Education in Alabama, new forms of assessment were squelched amid public controversy over the phrase "outcomes based," which some equated with "values" education. "Changes may come to a radical halt" (phone interview, November 1, 1993).

Although the efforts of these states illustrate a national movement toward outcomes and proficiency-based education, other states engaged in similar efforts deserve mention. Representatives from departments of education in Delaware, Rhode Island, South Carolina, South Dakota, West Virginia, and Wyoming all report new efforts related to outcome-based education or new forms of assessment, or both. Many states bind their efforts toward outcomes or proficiency standards and assessment with legislation, including: Arkansas's Act 236, Colorado's HB 1313, Michigan's HB 4836, Tennessee's New Educational Act, and Wisconsin's SB 483.

The PASS staff is continuing its review of state-level initiatives.

D. Defining "World-Class" Standards

One of the most-frequently heard references in the standards discussion is to the concept of "world-class" standards. House Bill 3565 refers to this notion in Section 2, which states that one of the specific objectives of the Act is "to achieve educational standards of performance and outcomes that match the highest of any in the world for all students." This phrase in the law has given rise to the idea that the standards for the Certificates of Initial and Advanced Mastery should be calibrated to "world-class standards."

It is much more difficult to agree on the specifics of world-class standards. This term has been interpreted to mean that Oregon schools should identify the highest level of performance expected of students in every country that might reasonably be considered our comparators. Establishing such standards can be somewhat problematic for a variety of reasons.

The New Standards Project (described earlier) is attempting to determine the degree to which the American curriculum meets "world class" standards (Nolan, 1993a). To do so, they are employing a technique from industry known as "benchmarking." Benchmarking is defined as "a process both for determining best practice in a particular field and for learning from it" (p. 1). The New Standards Project intends to produce a series of reports that define the standards other nations use to guide and measure student learning. They propose a timetable that would produce benchmarks in mathematics by mid-1994, science by mid-1995, and language arts by mid-1996. To do so, they will attempt to answer six questions:

- *What are students in other countries expected to know and be able to do at key transition points in their schooling?*
- *What kinds of performances are used to demonstrate competence?*
- *What counts as "good enough" in these performances?*
- *What percentage of children are meeting the standard?*
- *What reform efforts are underway or on the horizon?*
- *How does New Standards benchmark?* (p. 2)

The Toronto Board of Education launched a Benchmark Program of its own in June, 1987. They did so to provide parents with a way of knowing how well their children were doing in school, allow parents to participate meaningfully in decisions regarding their children's education, and enable parents to determine their children's achievement in relation to systemwide standards (Larter & Donnelly, 1993). In the five years since this program was enacted, the Toronto Board of Education has developed more than 100 Benchmarks for Language and Mathematics at grades three, six, and eight, which in Toronto represent the end of the Primary, Junior, and Senior Elementary Divisions. Benchmarks for the Secondary Division are well underway. Benchmarks are defined as "information to which teachers, students, and parents can refer to daily as they teach, learn, and assess achievement" (p. 59).

Even if performance levels can be defined, there is the question of whether these are performances that Oregonians want to utilize as the basis of their curriculum. Some assessment systems of other countries emphasize rote memorization, for example, to a greater degree than most Oregon educators deem desirable. Other nations employ their standards as a means of effecting social sorting, a goal inconsistent with the basic principles of American education. In other cases, higher performance is simply an artifact of certain material being taught at one level in a foreign school system and at another in the American system. These national comparisons are proving to be much more complicated than was imagined when the phrase "world-class standards" was coined.

At the same time, this process has caused American educators to take a closer look at the curriculum that is offered in a number of countries to all students (and which the vast majority master), particularly at the elementary level. There is emerging evidence that these curricula are, indeed, more challenging than the curriculum offered in the typical American school, and that it may not be unrealistic to expect improved student achievement and performance if the content and challenge levels of the curriculum are raised.

1. Lessons from the Netherlands on the Process of Standard-Setting

Van Den Brink (1993) describes the experience of the Netherlands in developing "attainment targets," the functional equivalent of performance standards. Van Den Brink defines attainment targets as:

> *objectives that describe the knowledge, understanding, and skills pupils must be able to demonstrate at the end of a period of education. Attainment targets explicitly relate to the requirements pupils must meet. In principle, these requirements only relate to the knowledge, understanding, and skills of pupils. Attitudes have been purposely excluded from the definition: they are difficult or impossible to describe in terms of concrete output . . .*
>
> *To describe required and demonstrable final outcomes, we must first distinguish between the following two components: (1) the subject matter (terms, concepts, principles, structures); and (2) the activities or "operations" based on the subject matter that the pupil must be able to perform . . .* (pp. 197-198)

The experience in the Netherlands reinforces the idea that there are ever-increasing layers of detail in any standard-setting process, and that the trick is to establish the proper framework with enough detail to allow teachers to gear their lessons to broad goals, enable curriculum developers to construct a variety of engaging learning experiences, to permit assessors to design tasks capable of capturing student performance and knowledge in a variety of authentic settings. This should be done without becoming excessively specific in ways that prohibit teachers from utilizing a variety of styles and approaches based on student need, interest, and ability.

Van Den Brinks recommendation to accomplish this is, first, determine the structure of the most important (approximately 5 to 10) *"subject components* or *domains."* This structure provides a framework within which to "hang" the attainment targets, and "is not a way of dictating how educational practice should be designed." Next, develop a number of *"general subject aims"* that typify the goals of the instructional process for each domain. Is the goal to have students acquire knowledge and understanding, apply specific information, arouse interest, explore relationships? Finally, formulate the attainment targets. Van Den Brinks suggests:

> *Establish the emphasis that must be included in an attainment target on demonstrating knowledge, showing an understanding of the subject, or possessing a required skill . . .*

Establish whether the entire design provides for inclusion of the following three components:

- *Knowledge of the conceptual basic structure of the subject*
- *An understanding of the socio-cultural context of the subject*
- *The skills of application, or applying what has been learned in relevant and realistic situations . . .*

Establish whether the attainment targets encompass both simple reproduction skills and difficult production skills. Reproduction primarily entails a literal repetition of what has been learned in a familiar situation. Production, on the other hand, entails applying what has been learned in a situation different from the initial learning context in such a way that the outcome is experienced by the pupil as something entirely new.

Estimate whether the proposal is overloaded with attainment targets . . .

Choose a specification level that is not too specific. A number of indications of unacceptable details may compel developers to adjust a proposal:

- *Does the design indicate a preference for a particular teaching method?*
- *Does the design encourage stereotypes (in male/female roles, for example) or ignore the position of cultural minorities?*
- *Does the subject matter form an unnecessary condition for the acquisition of attainment targets?*
- *Does the target more properly fall into the category of an "interim objective" rather than an attainment target?*
  (pp. 204-207)

These parameters and lessons help form the framework for making specific recommendations on standards and for creating more detailed descriptions of proposed standards.

Nolan (1993b) studied the Netherlands as the first country in the New Standards Projects benchmarking program. The existence of standards helped the Dutch to develop what Nolan describes as "one of the premier systems of mathematics in the world" (p. 9).

E. Elements of a Standard

To make a proficiency-based system work, the desired proficiencies must be stated in enough detail and with enough clarity to allow students to understand what is expected of them, allow teachers to design appropriate learning experiences, and allow assessors to create appropriate assessments that accurately capture the desired skills and knowledge. All of this must be achieved without overloading the system with too much detail. The remainder of this section discusses these issues and presents models designed to achieve this goal.

How can proficiency be determined? What are the elements of adequate proficiency? To answer these questions, desired proficiency must be specified in a form that both learner and assessor can understand and for which each can agree on its manifestations. This is accomplished by describing the desired attributes or performances in increasing levels of detail and by identifying the desired level of performance and the means by which proficiency will be ascertained.

There is no ideal level of detail to achieve this goal. Each level of detail leaves questions, ambiguities, and inferred meanings. The establishment of a proficiency standard, then, is the process of specifying enough detail to enable all parties to understand and agree before the fact what constitutes proficiency, in terms of both the elements and the levels required or expected.

Given this inherent arbitrariness regarding level of detail, the following elements are presented to demonstrate a possible framework for a functional system of proficiencies that would serve as the basis for admission into higher education in Oregon. A proficiency standard is made up of the following elements:

1. **Proficiency Area.** The area is a general statement describing a large body of knowledge, discipline, subject, or dimension of cognitive or social functioning. By its nature the area needs further definition. Its brevity makes the overall proficiency-based system more manageable.

2. **Extended Definition or Description.** The extended definition provides in narrative form a more detailed description of the limits, focus, and intent lacking in the area statement. This definition serves as a basis for developing a basic understanding of the area of knowledge or cognitive skill for which proficiency is being specified.

3. **Proficiency Indicators.** Proficiency indicators form the core of the standard. They consist of a number of carefully crafted and worded statements designed to provide enough detail to ensure that all important elements of the standards are identified while not overwhelming the system with detail. Indicators consist of descriptive behaviors, skills, and/or knowledge stated in terms that allow for their assessment in performance mastery terms.

   Indicators walk a fine line between excessive specificity and generality. A standard would generally comprise no more than nine or ten indicators.

4. **Proficiency Levels.** Proficiency levels define a range of performance relative to each indicator. Proficiency levels specify behaviors that are below (or precedent to) and above (or subsequent to), or are components of the behavior stated in the indicator. There are three basic proficiency levels: Does Not Meet Standard; Meets Standard; and Exceeds Standard. In essence, proficiency is specified through a system of "rubrics." Rubrics are defined as a series of statements identifying aspects of proficiency in both its parts and its whole in terms that raters can be trained to apply in a reasonably uniform fashion to a range of student work. Many rubrics contain more than three levels, offering more feedback to the learner regarding degree of mastery of a standard.

   The indicators and proficiency levels serve as the outline that suggests appropriate instructional tasks for teachers and students. This framework both allows and compels teachers to design curriculum and instruction in ways that ensure that essentially all students reach high levels of performance.

5. **Performance Assessments.** Performance assessments are the specific tasks or technologies by which mastery of the proficiency indicators is demonstrated. These must be designed to capture the knowledge, skills, or behaviors identified in the indicators. Generally, these assessments involve the application of knowledge and concepts to complex problems and real-world settings as one of their dimensions.

F. Example of a Standard: Science

The following example illustrates how the various elements described above might look when applied to a specific area, in this case science. Additional detail would be required to operationalize the indicators and make it possible to develop appropriate assessments. This example is meant to be illustrative only.

Table 2
Science Performance Standard Example

Outcome: High Degree of Mastery of Science

Mastery Proficiency Indicators	
1.	Assesses the appropriateness of the methodology of an experiment.
2.	Engages in a scientifically informed discussion of a contemporary issue.
3.	Assesses the accuracy of scientific information and claims presented on television, in magazines, and in books.
4.	Defines advanced scientific terms.
5.	Reads and explains articles from science-oriented magazines.
6.	Applies scientific concepts to other disciplines (e.g.: art, writing, math).
7.	Applies scientific principles and concepts from a variety of scientific disciplines to personal decision-making and problem-solving.
8.	Gives examples of how scientific discoveries and/or ideas have affected human society and culture.
9.	Applies basic concepts, principles, and terminology from biology, chemistry, physics, geology, ecology to complex problems.
10.	Provides a plausible explanation when asked to explain why an experiment did not yield predicted or desired results.
11.	Constructs an experiment utilizing the scientific method and critiques the limitations of the experiment and of the scientific method as a tool for understanding natural phenomena.
12.	Challenges evidence based solely on authority to support scientific statements.

Proficiency Levels (or Rubrics)	Example of a Proficiency Levels for Indicator #11
A series of statements that define acceptable proficiency for the standard or for a specific indicator. Proficiency levels identify precedent and antecedent skills on both sides of a mastery level. Proficiency levels can span grade levels (culminating outcomes), be cumulative across grade levels (increasing sophistication), or specific to a particular age or grade (benchmark). Proficiency levels and rubrics can be the same thing in many cases.	1. Identifies the elements of an experiment. 2. Develops an experiment that closely approximates a model given. 3. Develops an experiment independently that incorporates many elements of the scientific method, but is unable to critique it. *4. Develops an experiment that incorporates all the elements of the scientific method; conducts and critiques the experiment successfully.* 5. Employs logic along with rational and intuitive problem-shaping and -solving to frame and investigate a significant question. 1-3 = below standard *4 = meets standard* 5 = exceeds standard
Assessment Methods	**Examples of Possible Assessments**
Assessments are varied and sophisticated. They require demonstration of complex thinking in addition to content knowledge and skills as a learner. Some important indicators require multiple validation; others need be validated only once. Assessments should be authentic; they should relate to real-world tasks and the application of knowledge and skills to genuine problems and situations. Mastery can also be demonstrated by documentation of non-class experiences in some cases.	▸ Score of 3 on rubric that described level of sophistication when applying scientific concepts. ▸ Score of 90 percent on test of scientific terms. ▸ Development of a series of criteria for reviewing an interdisciplinary project that addresses some of the science indicators. Criteria address general and specific elements of the project, such as success in applying scientific concepts and principles. ▸ Achievement by student of series of tasks regarding selecting, analyzing, critiquing a series of articles with scientific themes from magazines. (Check-off by teacher noting successful achievement of each required task). ▸ Establishment of acceptable levels of written and oral expression in relation to predetermined scale or criteria. ▸ Letter from a qualified individual attesting to a students mastery of a particular skill or performance level.

G. Analysis of Standards

The current work on national standards generally and content area standards specifically provides a wealth of information and ideas regarding the possible content of proficiency standards. National curriculum organizations have convened panels of distinguished experts to do initial development work, and have, in many cases, then distributed the results of these efforts widely for review by the field. Employing a modified Delphi technique, some projects have assembled inclusive lists of desirable content knowledge and intellectual skills, and have asked teachers to rate the centrality of each to a students mastery of a discipline. From processes such as these, each group has created a thoughtful, comprehensive picture of what students should know in a particular discipline.

Utilizing these reports is somewhat problematic to those outside their development, particularly if one attempts to compare reports. Each employs a unique format, reflecting the project's conception of the organization of knowledge. Each tends to utilize its own vocabulary to describe elements of the discipline and student performance. And each organizes its presentation of this information uniquely.

To attempt to discern the trends present from report to report, and to clearly compare reports, the PASS staff developed a scheme for analyzing the content recommendations of each report, and coding them into two categories: content knowledge and intellectual processes. The elements are entered in the precise language of the report to the maximum degree possible, thereby enabling the user to discern the intent of the report writers. Each report is contained in a separate record within a computer data base. This allows further analysis to identify commonly-occurring themes and content. It also allows reports to be printed in any number of ways to combine elements of reports. These data were made available to groups charged with creating the specific performance indicators for the OSSHE proficiency-based admission model. These groups also have excerpts of the original documents, thereby enabling them to place the analyses in context. The primary purpose of this content analysis is to make a large, unwieldy body of data user-friendly and accessible to those developing the specific content requirements for the OSSHE model.

A listing of the reports is included in Appendix C.

V. The State of the Art in Performance Assessment

Once proficiency standards are developed, the next step is to develop appropriate assessments. This section discusses a variety of performance assessments methods to illustrate the rapid developments in this field. The discussion begins with a consideration of the purposes of assessment, proceeds to an examination of current assessment strategies being employed in public schools, and concludes with examples of performance-based assessment techniques currently employed in higher education institutions.

A. Types of Assessment

1. Internal

Internal assessments are those conducted (and often designed) by an individual teacher based on products of the classroom such as tests, attendance, projects, and written work. These internal assessments form the basis for the awarding of grades. They are quite versatile and adaptable to a wide range of learning situations and settings; however, they have little generalizability across settings. Two teachers teaching the same subject in the same school might choose to construct vastly different assessment systems. These systems might lead both to different student learning, and to different student performance on similar learnings. Internal assessment systems possess the ability to be highly valid (although they are not always so) but generally have low reliability. A grade of A in one school is rarely the same as an A in its neighbor.

2. External

External assessments are standardized and, in theory, produce scores that are comparable across schools. These types of assessment offer a method for ranking relative performance of all students taking the test, regardless of the school attended or the judgment of the teachers they have had. These methods are less valid in that either they do not capture well the complexity of what was taught, or they reduce that complexity to the level of the lowest common denominator. They are relatively highly reliable since their design has come to be controlled by people whose primary skills (and therefore concerns) relate more to the psychometric properties of testing instruments than to their validity.

3. The Challenge of Assessment

The challenge is to construct a system of assessment that is both valid and reliable, and is also predictive of success in higher education. Such a system has several important components. It needs to assess worthy intellectual tasks and behaviors. It must be clear on the critical content and knowledge that is to be required, without overloading the system with detail or unnecessary low-level cognitive knowledge. It must have standards that can be understood and applied uniformly by numerous assessors. At the same time, the results must be amenable to efficient and economical processing that produces data that are comprehensible and meaningful across institutional boundaries. This system will also need to provide students accurate indications of their progress, both in class and toward higher education admission.

Such an assessment system would fulfill many of the needs that internal and external assessment systems do currently. It would provide ongoing feedback to students on their progress and skill development. It might be used as the basis for grades, although grades would have less meaning in such a system where the key result was the last assessment score the student had achieved. Standards would be clear and relatively constant. Students would be able to determine their progress and achievement on a continuing basis.

Furthermore, with one assessment system instead of two, teachers could both align their teaching better with the desired standards and devote more time to assessment activities in the classroom.

Vickers (in press) describes this dichotomy between internal and external evaluation in American schools and notes its impact on both students and teachers:

> *Assessment for high school graduation in the United States is entirely internal. Provided students obtain adequate grades on a specified set of courses they will achieve a high school graduation diploma. Because graduation diplomas from different high schools are not comparable with one another, the diploma's portability is limited. Employers find it difficult to rely on high school grades when recruiting new labor market entrants, Nevertheless, the diploma does carry weight: young people with a diploma earn more in the labor market than do dropouts* (Ray & Mickelson, 1993).
>
> *There is no simple, systematic way that employers in the United States can compare the performance levels of students from different high schools. This contrasts with the arrangements for higher education, where SAT tests represent a standardized component in the admissions process. Because there is no agreed common curricular content across American high schools, the SAT bears no formal relationship to the high school curriculum. Furthermore, American students take the SAT and other higher education admissions tests on a voluntary basis. Some of the students in any given high school class will not be interested in*

> *taking the SAT. Contrary to common practice in the European tradition, the SAT is not a test for which teachers are expected to prepare their students.* (pp. 6-7)

It may be difficult, but not impossible, to develop assessment systems that combine validity and reliability. As noted earlier, there are models already functioning in other places in the world that appear to do a reasonable job achieving this goal. Vickers describes practices in Europe and Australia to demonstrate that elements of these systems might be adapted to the United States:

> *In Europe, assessments for academic credentials often rely on pencil-and-paper tests, but assessments for employment-related credentials tend to use a wider range of formats. For example, in Germany, apprenticeship assessments include a demonstration of practical skills, an oral component and a written test. Although the requirements for apprenticeship certificates are externally determined, the practical component is administered in the work place (German Academic Exchange Service (DAAD), 1982). The processes used in Germany suggest that it is possible to make reliable comparisons of the performance and skill of individuals without resorting to standardized tests. Likewise, in Australia, flexible combinations of internal and external assessments promote the use of authentic measures within the schools. In some (but not all) states, scores from internal assessments are recalibrated using cross-school comparisons of portfolios and test scores . . .*
>
> *In the current American system, employers and the public tend to be skeptical about assessments conducted within the high schools, especially in relation to students who are not on the college track. On the other hand, while the external assessments such as the SAT are standardized, they are inadequately related to the curriculum and its broader purposes. Broad-based dissatisfaction with this approach is emerging, and assessment reform is now clearly on the political agenda in the United States. Among reform proposals being considered, certain core issues have emerged. Progress is being made toward defining common standards of performance, although there is not, as yet, any infrastructure that could enforce such standards. Nevertheless, reformers seem to agree that content-based assessments should be used, and that students should be able to acquire certificates that signify what they have accomplished during their high school years. One way to implement these reforms would be to introduce, on a state-by-state basis, high school graduation assessments similar to those used in Australia*

> *and most European countries to mark the end of secondary schooling.* (pp. 7-8)

Germany, France, and Australia have systems that allow, or are moving toward, varying degrees of local curricular autonomy. Each has or is creating national performance standards that are administered and, in some cases, scored locally. The key to making this work is that:

> *the assessment tasks have been designed by the statutory authorities to be of equivalent difficulty. Because this is so, the authorities are prepared to compare the performance of different students engaged with different subject matters as if they were all taking the same standardized test.* (Vickers, in press, p. 13)

This system allows all of the students in a classroom to focus on the same set of well-defined, well-understood tasks. Even those students not planning to attend college share a commitment to mastering the same curriculum and completing similar assessments. The American system, which allows some students to choose to take the SAT while others in the same classroom have very different academic goals (and assessments), is problematic in several regards when viewed against this model.

In contrast to SAT results which are in the form of scaled scores, French and German examination papers are returned to schools and students. The previous year's exams are documents to which both students and teachers refer in the classroom. They provide an indication of the kinds of tasks students will be expected to perform and the standards to which they will be held. Broadfoot (1993) observed that once the *Bacclauréat* papers are published, every teacher studies them closely. In effect, those exams become this year's curriculum.

Centralized assessment can cut both ways. If not linked to local curriculum, it can actually increase the dropout rate rather than enabling all students to achieve at higher levels. In New South Wales, Australia, the assessment authority administers an external, norm-referenced test at the end of grade ten. In contrast, other Australian states have eliminated formal assessment at grade ten in favor of more comprehensive demonstrations at the end of grade twelve. A larger proportion of students in New South Wales than in any other state leave school at the end of tenth grade, in large measure due to their performance on these tests. Vickers (in press) notes the dangers of centralized assessment:

> *Centralized assessment has two main pitfalls. First, as already discussed, it can restrict curriculum diversity. Second, one-shot exams almost certainly provide less valid measures of student ability than assessments conducted over several months within the school.* (p. 15)

B. Types of Performance Assessment[3]

While large-scale projects are being undertaken by states, universities, and large research centers to develop new performance standards and new assessment tools and strategies, many educators at the district and school-site levels are actively involved in creating their own standards and assessment methods. They are not necessarily waiting for the large-scale projects (with their long timelines for development and their tendency to create a horse-by-committee) to produce the ultimate model for student assessment. Instead they are inventing their own models. The following discussion presents several examples of these models as they are being developed by schools. The examples span a wide range of techniques including student interviews, learning logs, public demonstrations, and holistic assessments such as rubrics, portfolios, and integrated capstone projects and performances.

1. Portfolios

Portfolios are "collections of a student's work assembled over time" (Feuer & Fulton, 1993, p. 478). Portfolios often show the development of works in progress.

> *Students usually choose the works included and offer reflections on them. Some portfolios also include other "indicators" of achievement, such as videotaped presentations, testimonials, lists of books read, and even test scores. Portfolios are commonly used in writing . . . [and] are beginning to [be used] . . . in math and science as well.* (Willis, 1990, p. 5)

Two school-based research projects (Rogers & Stevenson, 1988) explored a variety of techniques for assessing student work. Assessment of a fifth-grade social studies unit included the following methods:

- *Small-group interviews: In small group discussions with an adult, students are asked to explain what they have learned. The level of*

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[3] Elements of the following section excerpted and adapted from Conley, D. (1993). Roadmap to Restructuring: Policies, Practices, and the Emerging Visions of Schooling. Eugene, Oregon: ERIC Clearinghouse.

student understanding is probed and explored through these discussions.

- *Situational pictures: Children view a picture of a situation that illustrates the conflict caused by the application of some right (a nativity scene on public property being taken down two weeks before Christmas), and are asked to discuss its significance and meaning.*

- *Card sorts: Students are provided information about key governmental roles and institutions and are asked to sort them into piles labeled "most important" and "least important," and to provide a rationale for the decisions they make.*

- *Learning logs: Students describe in a notebook the most important thing they learn each day, identify areas where they are confused, and so forth.*

- *Leader snapshots: Students view pictures of key government figures and then attempt to identify them and tell what they do.*

- *Open-ended versions of conventional tests: Students provide extended explanations to more traditional questions. After answering an agree/disagree question, students list examples and provide justification for agreeing or disagreeing.* (pp. 69-70)

The alternative strategies used to assess student learning from an eighth grade unit on the poet Robert Frost were of a very different nature. A series of longitudinal tests and interviews were employed. Beginning with a test given immediately following the completion of the unit, researchers returned periodically through the rest of the semester and readministered elements of the original test. They also interviewed students. The results of this procedure provided insight into what students actually retained over time from a unit in which they scored well on the initial post-test. In addition, the assessment captured student perceptions and motivations related to the learning experience. This type of information is useful not only to students but to teachers, who can use the feedback the next time they prepare to teach the same material. Teachers often lack this type of information and mistakenly interpret the post-test results as an accurate gauge of student learning, as do the students.

2. Demonstrations/Expositions

Demonstrations, or culminating exhibitions, are generally designed to display the result of large-scale, integrated projects or skill sets and are:

> *. . . designed as comprehensive demonstrations of skills or competence. They often require students to produce a demonstration or live performance in class or before other audiences. Teachers or trained judges score performance against standards of excellence known to all participants ahead of time. Exhibitions require a broad range of competencies, are often interdisciplinary in focus, and require student initiative and creativity. They can take the form of competitions between individual students or groups or may be collaborative projects that students work on over time.* (Feuer & Fulton, 1993, p. 478)

Often such exhibitions are made before a committee comprised of staff, students, and "outside" adults. (Willis, 1990, p. 5)

A strategy that involves public demonstration of work by groups of students is exemplified by the Rural Educational Alliance for Collaborative Humanities (REACH) Program's use of an exposition for students from ten project sites to display their work (Barone, 1991). The REACH Program encouraged students to explore their personal and community history and the culture of their rural community to help foster a sense of connection among the students, the school, and the community. Students produced writings, interviews, dramatic presentations, and media productions. These were presented at a two-day "exposition," along with portfolios demonstrating student work such as poetry, stories, and collections of essays that demonstrated the students' progress.

3. Rubric-Based, or Holistic Scoring Systems

Rubric-based, or "holistic" scoring systems include both (a) discrete objective criteria, usually specific elements that must be present to earn a specific score (the "rubrics"), often with examples of work conforming to the criteria; and (b) subjective judgments about the overall quality of the work (general impression marking or GIM), which is used to rank or rate the product being evaluated (Isaacson, 1988). Holistic scoring systems have been used extensively in the evaluation of writing, oral presentations, and demonstrations.

Holistic assessment generally relies on the use of a scoring rubric to determine student performance. The rubric contains specific descriptions of behaviors and evidence of performance an observer can use to analyze and categorize the student's performance along a continuum, usually designated by a numeric scale of one to five, with five representing the highest, most competent, and most complex level of performance.

One of the advantages of the rubric method of scoring is that it can be developed and applied by teachers. The behaviors identified as the focal point for observation in most rubrics are ones that can be grasped relatively easily by educators, students, parents, and community members. They also can generate discussion about what it is students should know, and at what levels and by what means they should demonstrate mastery of this knowledge.

An advantage of using rubrics is that they signal beforehand the outcomes necessary for success; learners don't have to guess what they must do to be successful. Furthermore, the rubric can be applied to preliminary drafts or be used throughout a course of study to provide formative feedback to the learner indicating clearly what she or he must do to improve performance. Such feedback can be more valuable and useful than a numeric score on a test.

The standard for success is identified before the fact, as well. A three on a scale of one to five might be designated as meeting the school's standards for mastery. Schoolwide profiles of student performance that are more descriptive than test scores can be developed and provided to teachers to help them pinpoint deficient areas to be addressed in the future. Schoolwide profiles also enable parents to understand what students can and cannot do as demonstrated by the assessment. This knowledge helps in the process of identifying school improvement goals.

Mark Twain Elementary School in Littleton, Colorado, created a rubric to judge written reports produced by fifth-graders as one element of an assessment process that also required them to research a topic, create a visual presentation relevant to the research topic, and deliver an oral presentation three to five minutes in length. Each element of the process was assessed individually, and a separate rubric was employed to assess the oral presentation as well.

The written report was assessed employing the following five-point rubric:

> *5 - Excellent: The student clearly describes the question studied and provides strong reasons for its importance. Conclusions are clearly stated in a thoughtful manner. A variety of facts, details, and examples are given to answer the question, and provide support for the answer. The writing is engaging, organized, fluid, and very readable. Sentence structure is varied, and grammar, mechanics, and spelling are consistently correct. Sources of information are noted and cited in an appropriate way.*

4 - Very Good: The student adequately describes the question studied and provides reasons for its importance. Conclusions are stated in a thoughtful manner, but with less clarity and insight than in an Excellent rating. A sufficient amount of information is given to answer the question, and provide support for the answer. The writing is engaging, organized, and readable. Sentence structure, grammar, mechanics, and spelling are generally correct, and sources of information are appropriately noted.

3 - Good: The student briefly describes the question and has written conclusions. An answer is stated with a small amount of supporting information. The writing has a basic organization although it is not always clear and sometimes difficult to follow. Sentence structure and mechanics are generally correct with some weaknesses and errors. References are mentioned, but with some adequate detail.

2 - Limited: The student states the question, but fails to fully describe it. The answers and/or conclusions given are vague, and basic information may be lacking. The writing generally lacks organization and is difficult to follow. There are many errors of sentence structure and mechanics. References may or may not be mentioned.

1 - Poor: The student does not state the question. No answer or conclusion is given. The writing is disorganized and very difficult to read. Sentence structure and mechanics are consistently weak. References may or may not be mentioned.

0 - No written report is made. (Littleton Public Schools, 1988)

4. Performance Demonstrations and Capstone Projects

Projects, like exhibitions, are often conducted over an extended time interval. Projects can be highly teacher-directed: the student is to arrive at some predetermined goal through a teacher-specified activity or series of activities. Or they can be largely student-directed, whereby the student chooses an area of interest and explores the area in considerable depth, culminating in a specific product which has been approved by the teacher/instructor.

One example of a project would be a scientific experiment to test how well a student understands scientific concepts and if she or he can carry out scientific processes. Activities that might be assessed through a science experiment project include:

> *developing hypotheses, planning and carrying out experiments, writing up findings, using the skills of measurement and estimation, and applying knowledge of scientific facts and underlying concepts–in short, "doing science."* (Feuer & Fulton, 1993, p. 478)

The performance demonstration is yet another form of holistic assessment. Walden III, an alternative school in Racine, Wisconsin, with a long history of performance assessment, has developed what they title a "Right of Passage Experience" (ROPE). This process has served as a model for other schools. The model contains the following dimensions. All seniors must demonstrate mastery in 15 areas of knowledge and competence by completing a portfolio, a project, and six other presentations before a ROPE committee consisting of staff members (including the student's home room teacher), a student from the grade below, and an adult from the community. Nine of the presentations are based on the materials in the portfolio and the project; the remaining six presentations are developed especially for the presentation process.

The Portfolio: The portfolio, developed during the first semester of the senior year, is intended to be "a reflection and analysis of the graduating senior's own life and times." Its requirements are:

1. *A written autobiography, descriptive, introspective, and analytical. School records and other indicators of participation may be included.*

2. *A reflection on work, including an analysis of the significance of the work experiences for the graduating senior's life. A resume can be included.*

3. *Two letters of recommendation (at minimum) from any sources chosen by the student.*

4. *A reading record including a bibliography, annotated if desired, and two mini-book reports. Reading test scores may be included.*

5. *An essay on ethics exhibiting contemplation of the subject and describing the student's own ethical code.*

6. *An artistic product or written report on art and an essay on artistic standards for judging quality in a chosen area of art.*

7. *A written report analyzing mass media; who or what controls mass media, toward what ends, and with what effects. Evidence of experience with mass media may be included.*

8. *A written summary and evaluation of the student's coursework in science/technology; a written description of a scientific experiment illustrating the application of the scientific method; an analytical essay (with examples) on social consequences of science and technology; and an essay on the nature and use of computers in modern society.*

The Project: Every graduating senior must write a library research-based paper that analyzes an event, set of events, or theme in American history. A national comparative approach can be used in the analysis. The student must be prepared to field questions about both the paper and an overview of American history during the presentations, which are given in the second semester of the senior year.

The Presentations: Each of the above eight components of the portfolio, plus the project, must be presented orally and in writing to the ROPE committee. Supporting documents or other forms of evidence may be used. Assessment of proficiency is based on the demonstration of knowledge and skills during the presentations in each of the following areas:

1. *Mathematics knowledge and skills are demonstrated by a combination of course evaluations, test results, and work sheets presented before the committee, and by the ability competently to field mathematics questions asked during the demonstration.*

2. *Knowledge of American government should be demonstrated by discussion of the purpose of government; the individual's relation to the state; the ideals, functions, and problems of American political institutions; and selected contemporary issues and political events. Supporting materials can be used.*

3. *The personal proficiency demonstration requires the student to think about and organize a presentation about the requirements of adult living in our society in terms of personal fulfillment, social skills, and practical competencies; and to discuss his or her own strengths and weaknesses in everyday living skills (health, home economics, mechanics, etc.) and interpersonal relations.*

4. *Knowledge of geography should be demonstrated in a presentation that covers the basic principles and questions of the discipline; identification of basic landforms, places, and names; and the scientific and social significance of geographical information.*

5. *Evidence of the graduating senior's successful completion of a physical challenge must be presented to the ROPE committee.*

6. *A demonstration of competency in English (written as well as spoken) is provided in virtually all the portfolio and project requirements. These, and any additional evidence the graduating senior may wish to present to the committee, fulfill the requirements of the presentation in the English competency area.*

The above description is drawn from the 1984 student handbook, "Walden III's Rite of Passage Experience," by Thomas Feeney, a teacher at Walden III. Preliminary annotations are by Grant Wiggins. (Cushman, 1990, p. 10)

5. Criterion-Referenced Testing

Criterion-referenced testing "measures a student's mastery of specific skills" (Ysseldyke, Algozzine, & Thurlow, 1992, p. 192), rather than the student's standing relative to other students. The purpose of criterion-referenced assessment is to provide a measure of the extent to which individuals or groups have mastered specific curriculum content.

Criterion-referenced tests are developed by specifying the objectives or criteria to be mastered (usually in basic skill areas), and then writing (test) items to assess mastery of the specific objectives or criteria. The two critical (and controversial) issues in the development of criterion-referenced measures are establishment of the criteria; and setting the level of mastery -- usually 80-100 percent for important material and 50-80 percent for less important material. Both of these factors must be clearly defined if criterion-referenced assessment results are to be valid and reliable. Variations of criterion-referenced testing include curriculum and performance-based assessment/measurement (CBA/CBM and PBA/PBM).

C. Examples of Performance Assessment as a Dimension of Admissions and Instruction in Higher Education

Many of the techniques discussed above are not foreign to institutions of higher education. Portfolios and demonstrations, in particular, have long been a dimension of the admission process in schools of fine arts, architecture, and music.

In addition, there are a number of colleges that employ these techniques extensively within their undergraduate program. The following section presents examples of how performance-based assessment is utilized both for admission and within the curriculum of colleges and universities.

1. Private Colleges

a. Alverno College

Alverno College, Milwaukee, Wisconsin, provides one of the best examples of a college that has implemented the principles of performance assessment and outcome-based approaches to learning in the higher education environment over a long period of time.

Alverno has identified eight abilities that every student must master. These are the skills Alverno believes that students need to put the knowledge they have gained in college into practice. These skills are:

- *Communication: Make connections that create meaning between the individual and her or his audience. Speak, read, write, and listen effectively using graphics, electronic media, computers and quantified data.*

- *Analysis: Think clearly and critically. Fuse experience, reason, and training into considered judgment.*

- *Problem-solving: Determine what the problem is and what is causing it. With others or alone, form strategies that work in different situations. Act on these strategies, then evaluate effectiveness.*

- *Valuing: Recognize different value systems while holding strongly to one's own ethic. Recognize the moral dimensions of decisions and accept responsibility for the consequences of one's actions.*

- *Social interaction: Know how to get things done in committees, task forces, team projects and other group efforts. Elicit the views of others and help reach conclusions.*

- *Global perspective: Act with an understanding of and respect for the economic, social and biological interdependence of global life.*

- *Effective citizenship: Be involved and responsible in the community. Act with an informed awareness of contemporary issues and their historical contexts. Develop leadership abilities.*

- *Aesthetic response: Appreciate the various forms of art and the contexts from which they emerge. Make and defend judgments about the quality of artistic expressions.* (Cited and adapted from the Alverno application brochure)

The course of study emphasizes an "active approach to learning." Every course has two aims: to help students master the course's subject matter and to develop one or more of the eight abilities listed above. The program emphasizes less lecturing and more discussion; less time on cramming for exams and more time on projects and performance-oriented assignments; and less emphasis on "objective" tests and more on individualized evaluations.

Assessment is holistic and performance-based, with a strong emphasis on formative, or developmental uses of assessment in addition to summative, or judgmental purposes. For example, all students compile a videotape from speeches given throughout their college career. By graduation, this collection of speaking samples "gives dramatic evidence of students' growth in ability and confidence." (Alverno application brochure)

In another example from the content area, a history test on World War II might not ask students to "state the causes of World War II," but to present a speech to the United States Congress of 1940 explaining why war seems inevitable. This form of assessment determines the student's familiarity with the facts, ascertains his or her understanding of the historical context within which this information exists, and observes the student's communication abilities.

b. Reed College

Reed College, Portland, is a privately-funded liberal arts college of about 1,200 students. Admission to Reed College is achieved through a combination of traditional requirements and some more personalized aspects. All applicants must submit a high school transcript outlining the types of courses taken (AP, Honors, and IB preferred). The GPA is not used. SAT/ACT scores must be submitted. Additionally, each student must submit two essays on: one of four suggested topics; the "Why Reed" essay in which the student outlines the academic and social benefits she or he hopes to secure by attending Reed; two teacher recommendations; one counselor recommendation; the results of the English Composition with Essay Achievement Test.

Each student's completed application is blind reviewed by a minimum of three readers, two of whom are deans of admission. For students whose applications are considered to be marginal, a Committee of Admissions and Financial Aid comprised of faculty, staff, and admissions representatives reviews and recommends admission.

A majority of students enrolling at Reed complete an interview with either an admissions counselor on campus or with an alumnae in other states. The interviewer submits a summary statement of observations and recommendations to the admissions office.

c. Lewis & Clark College

Lewis & Clark College, a liberal arts four-year institution in Portland with about 1,800 undergraduates, has developed an alternative admissions procedure, the *Portfolio Path to Admissions*. In addition to the standard college application form, applicants create their own portfolios of materials that they feel best demonstrate the strength and breadth of the academic program they have completed in preparation for studies in higher education.

The Office of Admissions suggests the portfolio might include (but is not limited to) three to five samples of: graded work from advanced placement (AP) or honors courses; science projects or lab reports; term papers; computer programs devised by the applicant; samples of art, writing, or music; submissions to the school newspaper or other literary magazine; and/or personal journals. As well, applicants must submit three teacher recommendations. If the additional information is provided to the Office of Admissions, applicants have the option of not submitting standardized test scores (e.g., the SAT or ACT).

Dean of Admissions, Mr. Mike Sexton, has stated that while there has been considerable interest in the Portfolio Path, the number of applicants has plateaued. He feels that the numbers "may increase as soon as students begin to utilize portfolios at the high school level" (Personal communication, October 28, 1993).

d. Antioch University

Antioch is a privately-funded liberal arts college of about 650 students in Yellow Springs, Ohio. Approximately 850 students apply for admission to Antioch each year, of which 250 actually enroll. For over a decade the admissions process has involved a combination of traditional requirements and other flexible, more personalized aspects.

All applicants must submit a high school transcript outlining the types of courses taken with the GPAs provided. SAT/ACT scores are not required. Additionally, each student must submit at least one essay from suggested topics; either a second essay or a work of art or work sample; two letters of recommendation — one from a teacher/counselor, another from an employer if the student has been in the workforce for several years.

Each student's completed application is reviewed by two admissions counselors. If the student does not meet all admissions requirements, the application is sent to a Special Review Committee comprised of an admissions officer, a faculty representative, the cooperative education program coordinator, and the dean of students for review and a final decision on admission.

Approximately 75 percent of students applying to Antioch are interviewed by an admissions counselor as part of the admissions process.

2. Public Colleges

a. University of Oregon Department of Architecture

The Department of Architecture, in addition to the normal undergraduate admissions procedures to the University of Oregon, requires applicants to: provide three letters of recommendation; write and submit two short essays about a significant building or city visited and an object the student has made; include a portfolio of creative work with two required exercises consisting of two freehand drawings of a window, a simple tool or a natural object or a chair; other creative visual work including a personally satisfying project, freehand and measured drawings, basic design work, planning, painting, construction, furniture-making, clothing design, and ceramics. The entire portfolio cannot exceed 12 pages (24 faces).

The completed application packet is reviewed by an Admissions Committee of faculty to evaluate and score the applications on the basis of three attributes: creative capability; academic capability; and potential program contributions. The Committee averages the reviewers' scores to compile a ranked list of applicants from which successful applicants are selected and offered admission to the program in architecture or interior architecture.

b. University of Oregon School of Music

The School of Music requires entering undergraduate students to complete the normal admissions procedures to the University of Oregon, apply directly to the School for admission, and audition in either voice or instrument. The undergraduate is first accepted by the School, and then the University processes the application. Additionally, the School requires all students to take placement examinations in three areas: Music Theory, Aural Skills, and Keyboard Skills. The exams are diagnostic and used to determine the appropriate level for a student to commence studies in core curriculum areas.

The department also makes extensive use of proficiency demonstrations for course challenges. Instructors devise written and performance tasks that a student may complete outside of a formal class setting. Sometimes the student will submit an audio tape in addition to other work. These tasks are then reviewed by a faculty member who determines if the student is proficient, based on clearly-established performance standards of which the student is aware.

c. Miami University, Ohio

Since 1990 Miami University, Oxford, Ohio, has been encouraging high school applicants to submit portfolios of their best writing for college credit and advanced placement in composition courses. The *Miami University Portfolio Writing Program* has continued to expand, and in 1992 more than 15 percent of Miami's incoming students chose to submit portfolios consisting of: a reflective letter introducing the writer and the portfolio; a story or description; an explanatory, exploratory or persuasive essay; a response to a written text. The entire portfolio is limited to 12 pages. Approximately 45 percent of the students who submitted portfolios received either three or six credits in college composition. (Bertsch, et al., 1992)

These examples serve to make the point that the technologies and methodologies for making admission decisions based on student performance exist and have a history of successful application at a variety of private and public institutions. Although private institutions may be better prepared to admit students based on such methods, the implications should not be ignored by public institutions. Public institutions may find themselves at a distinct disadvantage, particularly if high-achieving students begin to shun GPA and SAT/ACT scores in favor of performance-oriented methods. Public institutions that adhere rigidly to bureaucratic, mechanistic admissions systems may be less appealing to students whose educational experiences generate portfolios, projects, letters of reference, and performances. Perhaps they will seek environments for postsecondary study that are more congruent with their learning styles, experiences, and strengths.

VI. The State of the Art in Proficiency-Based Admissions

Proficiency-based admission is defined as any approach that allows students to qualify for admission or for the granting of credit or waiving of college courses through means other than Carnegie units, course titles, and high school grades. This broad, inclusive definition qualifies many current practices such as AP tests, CLEP, and course challenge tests such as ACTFL foreign language proficiency exams, in addition to many newer approaches involving integrated assessments and demonstrations, portfolios, and other means of certifying proficiency.

Proficiency-based admission processes combine many of the elements described in the section on performance standards, including clearly-stated standards, indicators, and performance levels, a variety of assessment techniques, and explicit scoring criteria. The examples that follow are from state systems and individual universities around the nation and the world and may include one or more of these components of a proficiency-based model. All of these examples should be considered as descriptive of emerging approaches, not as definitive models. Some illustrate only one aspect of proficiency-based admission, while others illustrate many elements in combination. Each is instructive of some aspect of this new approach to admissions.

A. Examples of Projects or Proposals

Several universities have begun efforts to coordinate standards for university admissions with K-12 educational programs. They include the State University of New York; City University of New York; the University of Nebraska; the University of Wisconsin; and the University of Wyoming. Brief comparative summaries of these efforts follow.

1. State University of New York

In 1991 the State University of New York (SUNY) emerged as a leader in setting standards for incoming freshman. Its report, *"SUNY 2000, College Expectations; The Report of the SUNY Task Force on College Entry-Level Knowledge and Skills"* (State University of New York, 1992), directly responds to the student outcomes assessment movement in public schools. Calling for greater collaboration with public schools, SUNY spearheaded the creation of a task force charged with deciding what a SUNY college or university entrant should know and be able to do to be successful, and what program of study and forms of assessment should be used to gauge the readiness of students for successful entry-level collegiate study (p. x).

The recommendations of the task force encouraged "continuous authentic assessment experience" in high school, which may culminate in an "assessment file" used for academic planning at SUNY (p. xii). The task force also advocated the creation of a "High School Senior-Year College Preparatory Course" that would teach skills and information vital to success at a university (e.g., time management, group learning, university environment, and resources). In addition, the SUNY report recommends the establishment of a "Mathematics Early Alert and Intervention Program." Such a program would assess a student's readiness for college level math during the junior year of high school. This would help high school students choose math courses wisely during their senior year, hopefully leading to better preparation for university-level math.

The SUNY report also outlines entry-level skills and entry-level knowledge. Examples of entry-level skills include learning skills and processes such as use of computers for managing information, communication, and analytical skills. Entry-level knowledge focuses upon specific content areas (humanities, arts, foreign languages, natural sciences, mathematics, technology, social sciences and history) and often provides concrete suggestions for materials to be covered (e.g., Antigone, The Declaration of Independence, Islamic art). Moreover, attention to multicultural studies and an emphasis of the liberal arts in general are two key themes throughout the standards.

The SUNY report also describes plans for assessments that align with reforms in primary and secondary education mentioned earlier. Those plans advocate the use of authentic assessment, including the recommendation that the Regents Competency Tests and Regents courses (begun in 1979 for college-bound students) be accessible to all students. The task force also hopes to see modification in the exam itself, in effect, increasing expectations and outcome measures. Portfolios and projects are a primary theme of the discussion.

2. City University of New York

Another New York state institution, the City University of New York (CUNY), endorsed the College Preparatory Initiative (CPI) in 1991. The CPI attempts to increase the number of academic courses for high school students entering the university, while making provisions for non-traditional students. The CPI was a joint collaboration between CUNY and the New York City Board of Education:

> *Approximately 200 faculty from the University and the New York City Board of Education participated in the process of defining student competencies in each of the disciplines and developing a program for faculty collaboration. An Advisory Committee of the University Faculty Senate produced comprehensive statements of expected levels of student competency in the six disciplines included in the Initiative. A Chancellor's Advisory Committee, composed of college presidents and administrators,*

> *faculty members, and students, developed a plan for implementation. The proposal of the Chancellor's Advisory Committee was the subject of forums held on every campus, attended by students, faculty, and staff. Thousands of members of the University community took the opportunity to offer insights and recommendations.* (City University of New York, 1992, p. 2)

The efforts at CUNY are still underway. The 1993 Revised Competency Statements are still in draft form and comprise a thick packet of statements about desired competencies in art, music, English, foreign language, library, mathematics, science, and social studies.

3. University of Wisconsin

Another ambitious examination of admission philosophy and procedures is taking place in the University of Wisconsin system. A task force was appointed in 1992 in response to changes that were already occurring in a number of high schools within the state. These schools were beginning to abandon traditional course titles in favor of interdisciplinary approaches and were adopting outcome-based or competency-based programs in increasing numbers. The state system recognized the need to respond proactively to these changes and charged the task force with developing recommendations for how the university might adapt to these changes in public schools.

Competency-Based Admission: The Wisconsin Model Task Force Report (University of Wisconsin, 1993) offers three reasons why a change to competency-based admission is warranted. First, the university system should adopt a proactive stance toward the restructuring taking place in K-12 schools. Higher education should be encouraging experimentation and the movement toward higher standards in secondary schools, not inhibiting these initiatives. Second, support of performance-based instruction in the schools might reasonably be expected to result in better prepared freshmen, especially in writing and math. Third, by acknowledging changes occurring in public schools, it is possible to improve articulation and communication between educational institutions and constituencies at all levels. Although there is still room for traditional measures such as Carnegie units and ACT/SAT scores as the measure for most candidates, the admissions policy would allow competency-based assessments as alternatives to these means. The next stage of Wisconsin's efforts is to "develop competencies in major disciplinary areas and a profile by which levels of competency may be assessed" (Portch, 1993). The first workshop to develop these competencies took place in November 1993.

4. University of Wyoming

Similar to Wisconsin's exploration of competencies are the efforts begun about four years ago at the University of Wyoming. A phone interview with Associate Provost for Academic Affairs, Judith Powell (October 1993), illustrates Wyoming's successful struggle to coordinate with secondary education and develop a policy that welcomes competency-based equivalents. During the interview, Powell explained that the university was an open admissions institution by law, until the university began to press for heightened standards. University administrators began by tracking the performance of entering freshmen, an analysis that highlighted the need for admission standards.

The university worked to get "buy-in" from legislators, trustees, parents, teachers, and the community. The final result is an admission policy, based on input from hundreds of educators (secondary and postsecondary schools), slated to begin in 1995.

Titled the *University of Wyoming Admission Standards: Guidelines for High Schools*, the policy includes a reliance upon traditional Carnegie units or "their competency-based equivalents" (University of Wyoming, 1992, p. 5). The coordination between the university and school districts that emerged from the policy is somewhat unique. High schools use the criteria of the policy to plan acceptable curriculum for students who plan to attend the university. Then the proposed curriculum is reviewed, and hopefully approved, by the university system. A student who obtains a signature from a high school counselor certifying completion of the university-approved high school program is assured admission. The university plans to conduct "spot checks" to assure that high schools remain in compliance with the policy and its appropriate procedures. Students might also apply for admission with conditions. One economic and political ramification of the policy is that it has had the effect of doubling enrollment in mathematics and science in high schools.

5. University of Nebraska

The new admission standards adopted in 1992 for the University of Nebraska represent an incremental approach to change, but contain the potential to lead to fundamental changes shortly. The highlights of the Nebraska report pertain to changes in educational philosophy. The report acknowledges the current educational reform movement in K-12, stating that:

> *admissions policies within the University need to be flexible enough to accommodate change, while assuring that the skills and understanding necessary to succeed in the academic environment of university higher*

> *education are present in admitted students.* (University of Nebraska, 1992, p. 14)

Nebraska proposes to alter the number of Carnegie units required of incoming freshman by increasing required courses in English, mathematics, natural sciences, and academic electives, but also to begin to move to individualized admissions criteria based on competency. Evidence of greater flexibility can be found in the portion of the report that refers to admission by individual review. Of most interest is the report's statement that, "the committee recommends that consideration be given to admitting up to 25 percent of first-time traditional freshman students by review." (University of Nebraska, 1993, p. 20)

Students who are "deficient" in the new Core requirements and/or who have deficient ACT/SAT scores, or who are deficient in other requirements, may apply for individual review. Individual review may involve a variety of subjective assessments and/or special advising.

A response to reforms at the K-12 level also necessitates greater cooperation and communication between educators at all levels, according to Nebraska's admission policy. The policy calls for university educators to work jointly with elementary and secondary educators to develop a set of expectations for skills and masteries within the core courses. The report also observes that:

> *It is possible that such reforms may need to reach into higher education curricula and teaching as well, and it will behoove all educators to approach the discussions with mutual understanding and support and an open mind.* (p. 17)

6. University of Oregon

Other universities are beginning to discuss and develop standards for students matriculating to higher education institutions. Part of OSSHE's Education Innovations projects in 1992-93, the University of Oregon's *Shared Perspectives Project: Creating a Dialog on Standards for Education in Oregon,* is a prime example. The final report (University of Oregon, 1993) responds to the changing educational environment in Oregon brought on by the passage of HB 3565, the Oregon Educational Act for the 21st Century, which mandates that students demonstrate mastery on identified outcomes in order to receive Certificates of Initial and Advanced Mastery (CIM and CAM). A task force comprising 32 members (17 university educators, 15 high school educators) identified and detailed performance areas and performance indicators. The performance areas include the social sciences, foreign languages, science and mathematics, music, theater and visual arts, and writing written reasoning. Each area includes a list of performance indicators and offers examples of mastery performance levels. For example, the area of Social Sciences contains the following indicator:

> ***Performance Indicator 7***
> *An understanding of the governmental structures and political institutions of the United States, how they evolved and how they operate.*
>
> ***Examples of Mastery Performance Level***
> *Students know why the American colonists sought political independence and how they fashioned a new form of representative government. They know why interpretations of the Constitution have changed since 1789, why amendments have been added, how power is distributed among federal, state, and local governments, and the origins and contribution of political parties to the operation of government.* (Shared Perspectives Project, p. 9)

The University of Oregon's Shared Perspectives Project presents another example of a project designed to engage secondary and post-secondary educators in a dialog to identify commonly-held perceptions regarding appropriate preparation for college and university work.

Establishing partnerships between universities and K-12 educators is currently a relatively uncommon practice. Wood (1993) notes the lack of communication and coordination between faculty in higher education and K-12 teachers. Such "fragmentation" is largely ideological and cultural. He suggests that current reform agendas may offer opportunity for higher education to support reform efforts at the K-12 level. Similar efforts to reduce such fragmentation and increase communication across institutional boundaries have taken place at other campuses in the state higher education system, including the CAM project at Southern Oregon State College, and Oregon State University's science and mathematics for the CAM.

7. Southern Oregon State College

The goal of Southern Oregon State College's project was to determine the feasibility of bringing together diverse groups to design standards that require high levels of performance by students bound both for higher education and the workplace. The project did not seek to develop an exhaustive list of standards in each of the six Certificate of Advanced Mastery strand areas, but did use these strands as its organizing structure. At the time of the project, the CAM strands were entitled: Arts and Communication; Business Management; Health Services; Human Resources; Industry and Technology; and Natural Resources. For each of these strands, a team consisting of two high school faculty members, one community college faculty member, one SOSC faculty member, and one community member who was a practicing professional in the strand area was constituted. Each team identified one or two performance standards in its occupational strand along with appropriate performance indicators. Core indicators, spanning all strands, were identified. These included literacy, numeracy, research analysis, and interpersonal and group process skills.

8. College Board Response

Universities are not alone in responding to newer forms of assessment and reform in America's schools. The College Board, the agency governing the educational testing services responsible for administering the Scholastic Aptitude Test and other national tests such as the Advanced Placement program, has launched a number of initiatives to respond to changing admission needs resulting from altered practice in the K-12 system. A prominent example of the College Board's program of adaptation is the limited modification of the SAT that has already taken place. The College Board urges that preparation for the new SAT include additional reading, additional mathematics courses, learning how to use calculators, and as usual, a familiarization with the testing procedures. The new SAT includes a brief writing requirement in addition to the more traditional multiple-choice formats.

In addition, the College Board has launched two new programs, Pacesetter and Equity 2000. Pacesetter "offers outlines of course content and related assessment supported by professional development opportunities at the secondary school level" (College Board, 1992b). Students in a Pacesetter course would ideally encounter higher academic expectations along with embedded instructional and end-of-course assessments. The College Board hopes the Pacesetter program will meet the needs of *all* students, unlike AP courses designed primarily for college-bound youth. The College Board is working closely with professional associations to develop the new program thereby "generating consensus" (p. 6).

Equity 2000 began in 1990 and is aimed at helping minority and disadvantaged students achieve academic success (College Board, 1992a). The program also hopes to raise expectations and increase motivation for students. The program is organized into four modules: Academics; Guidance Counseling/Community; Research/Evaluation; and National Advocacy. The Academic Module has a primary emphasis on mathematics, both in planning sessions for teachers and in student enrichment activities. The other modules emphasize better guidance for students, community involvement in the program, continual evaluation to expand successful components of the program, and enhanced acceptance of the program at the national level as a tool to enhance academic excellence and equity.

The College Board appears to be aware of pressures for both generic educational reform and improved achievement by diverse and often disadvantaged students. Yet the reliance upon multiple choice testing for college admissions, namely the SAT, continues to be the primary function of the College Board. The vested interest in keeping the traditional SAT score, whether or not its methods contradict newer forms of assessment and hopes for equity, is a significant unresolved conflict for this organization. The SAT continues to be a primary sources of income for the College Board and a relatively inexpensive and simple way for admissions offices to process large numbers of applicants. Until a system can be developed that addresses the latter concern of admissions officers, traditional multiple-choice tests are likely to predominate.

B. International Examples of Operating Programs

There are a number of places in the world where proficiency as demonstrated through authentic assessment is an important element in the matriculation process. Most European countries and Canada employ some combination of centrally-administered examinations and teacher-monitored evaluations to make determinations about suitability for additional educational studies. These models offer less to the American system, since they emphasize social sorting in a way that is not acceptable in this country. However, they do demonstrate the feasibility of performance-based means for determining ability and knowledge.

In addition to the European model, the state of Victoria in Australia has adopted a model that bears much closer examination. The model, based on the Victorian Certificate of Education (VCE), parallels in many important respects the aims and goals of Oregon's school reform legislation. The Victorian system is based almost exclusively on student performance within prescribed areas, and provides usable information for admission officers still faced with the tasks of mass processing.

The remainder of this section discusses first the European models, specifically Germany, France, and Great Britain, then the Canadian model, and then considers the Australian system generally, and Victoria specifically.

1. Germany

Education is a state-level responsibility in Germany. There is considerable variation among the eleven Lander, the German designation for state. Students follow vocational, technical, and college preparatory tracks, enrolling in different schools for each. The Ministry of Education in each Lander sets the *Arbitur* examinations, which are administered and graded by the candidate's own high school teachers (Madaus & Kellighan, 1991).

The specific curriculum students learn to prepare for these exams varies throughout the nation, based in large measure on the skills apprentices in each area might need. For example, students near the seacoast have a different curriculum than those in the industrial heartland. The Lander-specific requirements for the *Arbitur* vary, but the certificate is recognized equally across the nation.

2. France

Examinations are set and graded by an outside agency, but the particular version of the *Bacclauréat* exam the student takes in French, history, or mathematics varies depending on region. Although assessment procedures are not uniform, every student who meets central examination board performance requirements by completing an approved combination of courses and passing the relevant exams is awarded a *Bacclauréat*.

3. Great Britain

The British have adopted a national curriculum with clearly-defined performance levels and assessments. Lofty (1993) describes this curriculum and some of the problems that have developed during the implementation process:

> *Like America, Britain has been intensely concerned that schools provide a labor force able to meet "world-class standards" for the 21st century. The widespread but questionable belief that standards fell during the 1980s prompted Margaret Thatcher's government to pass legislation in 1988 mandating a National Curriculum and an accompanying system of testing . . .*
>
> *Students' progress through the curriculum is divided into four "key stages." "Attainment targets" identify "the knowledge, skills and understanding which pupils of different abilities and maturities are expected to have achieved at each age."* (Graham, 1988, p. 52)

The drive to create a performance-based system where teachers monitor student progress via frequent and varied assessment, then prescribe or remediate accordingly, got lost on the way to implementation:

> *The worst-case scenario that many British teachers had feared is now coming to pass: a test-driven curriculum without significant attention to teachers' assessments of student progress through portfolios, presentations, or authentic tasks.* (p. 53) . . .
>
> *The intellectual energy generated among British teachers when they were initially brought together at the grass-roots level to define the content of individual subjects and schooling was itself instrumental for raising standards and teacher morale. But direct consultation between government and the teachers has become increasingly less common. Though teachers commend the curriculum as comprehensive, thoughtful, and appropriate to the task of raising standards, teachers are overwhelmed with the level of detail. For example, the Curriculum for English originally prescribed 159 statements of attainment . . . If American educators develop their own national curriculum, they will need to balance the impulse to write exhaustive, comprehensive goal statements with the awareness that assessment needs to be manageable by teachers and appropriate to how subjects are actually taught in classrooms.* (p. 54)

Scotland, which employs more teacher-controlled assessment methods and a diverse curriculum, has seen a lower dropout rate as a result. England and Scotland have differing approaches to postsecondary admission. England employs the A-levels, which restricts postsecondary access to about 15 percent of each age cohort of students. Scotland, by contrast, qualifies 23 percent for university admission. An even greater proportion of Scottish youth obtain general or vocational certification (Raffe, 1991). Scotland's upper-secondary enrollments have expanded more quickly than England's throughout the 1980s (McPherson, Raffe, & Robertson, 1990). Vicker's suggests:

> *Because differences in the youth labor markets north and south of the Scottish border are minor, Scotland's superior educational performance simply cannot be attributed to economic factors* (Raffe & Courtenay, 1988) . . . *(T)he Scottish upper secondary curriculum is more diverse and the approaches to assessment are more flexible than in England, and as a result, the dropout rate for Scottish youth is far lower than for their peers south of the border.* (Vickers, in press, p. 15)

4. Canada

Unlike virtually all other developed nations, Canada has no national-level government organization responsible for education. In each of Canada's ten provinces and two territories the department/ministry of education is responsible for developing provincial/territorial curricula with corresponding high school graduation certificates and requirements. Five of the ten provinces and two territories have provincial examination programs to assess grade twelve students' mastery of specific curricular content. The provincial examinations are: curriculum-based; teacher-developed annually; vary in item format (multiple-choice, short answer, extended written response); and determine between 30 and 50 percent of grade twelve students' final grades. The remaining 50 to 70 percent of final grades is determined by teacher-designed activities including tests, projects, and portfolios (U.S. General Accounting Office, 1993). Each province/territory determines the number of courses in which students must write departmental examinations (the number varies from one to 15). For the seven other provinces/territories that do not have provincial examinations, grade twelve students' final grades are determined solely by teacher-designed evaluations.

Admission of high-school graduates to publicly-funded post-secondary institutions in Canada is based primarily on high school standing and completion of required courses specified by the post-secondary institutions and approved by the provincial/territorial departments of education. Tests like the SAT and ACT are not used in determining eligibility for admission to post-secondary institutions.

5. Australia

There are notable similarities between Australia and the United States, which suggest that the American system might learn more from the Australian educational system than from the European models. Like the United States, Australia has a federal form of governmental organization, with education delegated to states. Australia's diverse student population is more similar to American schools than European systems, which serve relatively homogeneous populations. About one-third of all Australians are first- or second-generation immigrants and over 15 percent have a primary language other than English (Sturman, 1985). Australia has comprehensive high schools with graduation rates that approximate American rates (Australian Bureau of Statistics, 1992).

a. Reform in Australian Education

Australian states have been involved in large-scale systemic reform of their high schools over the past 15 years. They have moved from a model based on the British notion of education as a sorting process in which only a small percentage of students can reach colleges and universities, to an American emphasis on high completion rates for all students. During the 1980s, Australian graduation rates more than doubled, from 35 percent in 1981 to 71 percent in 1991 (Australian Bureau of Statistics, 1992). This changing function of the high school, further emphasized by the elimination of the distinction between technical and academic high schools, led to a reexamination and redesign of the assessment systems in place in each state.

Different states took differing paths. In some states, distinct high school graduation certificates emerged, each with varying social status. Curricular diversification was encouraged but teachers remained tied in practice to centrally approved, state-determined syllabi, since the state continued to develop assessments and the specific courses required to prepare for them.

b. Queensland

Queensland developed a unified system based on 45 subject "frameworks." These general outlines of a curricular area "encourage diversity by allowing schools to develop detailed, local course offerings tailored to student needs and local contexts" (Vickers, in press, p. 26). These courses fall within the 45 subject frameworks, the content and standards of each framework having been defined and approved by the state. Assessments are designed and administered at the school level, but the frameworks help ensure some consistency of student performance across the state (Baumgart, 1988).

Schools are compared by a process known as "moderation," whereby grades are recalibrated on a common scale. A standardized test, the Australian Scholastic Aptitude Test, was used as the scaling instrument. This test was replaced in 1991 by the Queensland Core Skills Test, which was designed to align more closely with the high school core curriculum as represented by the frameworks.

c. The Victorian Certificate of Education (VCE)

The state of Victoria built upon the work that had been done in Queensland but took the frameworks in a different direction. Victorian educators argued that the frameworks so substantially reduced the commonality of experience among students that it was in practice impossible to compare grades among schools. Furthermore, they rejected the notion of grade moderation, since this involved the use of standardized tests, and that was inconsistent with their commitment to authentic, content-based assessment. The system that was developed does result in grade comparability in combination with considerable instructional and curricular flexibility within schools. This system is known as the Victorian Certificate of Education (VCE).

Of greatest interest to the Oregon State System of Higher Education is the way in which the VCE handles assessment. Through three separate types of data gathering, the abilities of students are ascertained and analyzed in a form that is useful to and manageable by admissions officers, yet retains the best elements of authentic assessment. Furthermore, the VCE virtually eliminates the distinction between vocational and college-bound educational "tracks," while still allowing students to make choices and focus their efforts in one or another direction.

A final informative lesson from the VCE is its positive effect on teacher professional development in Victoria. Educators there report that the VCE causes teachers to interact on a regular basis, to examine each other's assessment criteria as well as to compare the work of their students to that of other students in the state. These opportunities for professional interaction around student performance stimulate the promulgation of higher standards and enhanced teaching techniques without the need for governmental intervention.

Vickers (in press) describes the VCE in detail, based on her work in the Australian system generally and Victoria specifically. Her description of the VCE explains both its impact and its structure:

> *The singular achievement of the VCE is that it has brought about common, state-wide agreements on curricular content, while at the same time allowing considerable local control over both teaching and assessment. It provides a range of options that lead to employment or higher education or both, and its methods of assessment and reporting aim to provide employers and higher education institutions with detailed information, allowing them to make fair and accurate comparisons among students.*
>
> *In designing the VCE, strenuous efforts were made to eliminate past practices which tracked students into different schools and different programs on the basis of their presumed future destinations . . .*
>
> *Designed to serve the needs of the whole student population, the VCE replaced all pre-existing grade 12 certificates [from technical and academic high schools] (McGaw, et al., 1990). Furthermore, in introducing the VCE, the Victorian Ministry of Education committed itself to amalgamating the state's Technical and High Schools into one common secondary system. The objective was achieved by 1992, and all the private and public secondary schools in the state prepared students for the VCE assessment process . . .*

Under the VCE, what teachers teach, and what students are expected to learn, is defined by the 44 frameworks or "studies." A "study" is, in effect, a course comprising four units taken over two years. To attain the VCE, a student must complete all the work requirements specified for 24 units (VCAB, 1992). Typically, a student will complete a sequence of five studies (i.e., 20 units) and will complete four additional units at levels 1 and 2. In general, study units at levels 1 and 2 are completed in grade 11, and units at levels 3 and 4 in grade 12. The additional four units may be spread over grades 11 and 12. VCE "studies" range widely over a number of areas including the traditional academic subjects, the performing arts, studies in technology and agriculture, media studies, and physical education. Completion of a core of studies in both the sciences and the humanities is required for graduation.

There are three fundamental aspects of student assessment under the VCE system (Victorian Curriculum and Assessment Board, 1991). First, credit is only awarded for a unit when all the work requirements for that unit have been satisfactorily completed. The second aspect involves assessment of the quality of the student's performance, and applies only to units at levels 3 and 4, which are taken during grade 12. Common Assessment Tasks (CATs) have been defined to enable teachers to judge a student's level of performance at this stage. Normally, a student will take four CATs for each unit, and at least one of these must be under examination conditions. Examples of internal and external CATs from mathematics study are presented in Table 4. Note that in this unit, two of the four CATs are externally assessed and two are internally assessed. For the internal or "school-based" CATs as well as for the external CATs, all the tasks the students are required to do are defined on a state-wide basis by the study design committees of the Victorian Curriculum and Assessment Boards [VCAB].

Study guidelines are distributed to all Victorian schools by VCAB. These define the frameworks within which teachers prepare their detailed [lesson] plans. School-based CATs are negotiated with students (see Table 3) and student work on a CAT is initially graded within the school. To achieve between-school comparability, the teacher's grades are subsequently checked by a panel of teachers from other schools, in a process known as "verification." All grade 12 teachers in Victoria are required to attend local Verification Panels, where teachers from several schools meet to agree on criteria for allocating the grades for each CAT. Professional VCAB staff attend Verification Panel meetings across the state. By so doing, *they attempt to minimize inter-regional difference in teacher's judgments in relation to student grading. Teachers are also required to provide randomly selected scripts or portfolios to the Regional Verification Panel for remarking.*

Tasks graded in the schools are normally those which could not be graded in the constrained environment of a formal examination. Typically, these involve consistent work over days or even weeks. They contribute to the authenticity of student assessment, by paying attention to learning and skills that cannot be measured under examination conditions.

While the formal purpose of Verification Panel meetings is to standardize grades for school-based CATs, these meetings also serve important professional development objectives. Teachers are able to share ideas about the interpretation of study frameworks and CATs, and observe the outcomes of other teachers' work.

Once the assessment process is complete, students receive a statement of results from VCAB. This records the grades obtained on every CAT associated with each study completed. VCAB does not perform any statistical adjustment to grades after the completion of the verifications or the external assessment procedures. If a student has applied to enter a higher education institution, the grades obtained by the student on each CAT are released to college admissions officers through direct electronic transfer from the VCAB data system.

A third element in the VCAB system of student assessment is the Student Profiles. These . . . provide a method of assessing and recording attributes similar to those identified by [the] SCANS [report: the Secretary's Commission for Achieving Necessary Skills, 1991] as important for workforce readiness (see Table 4). Student Profiles were developed in consultation with employers, higher education admissions officers, teachers and school administrators. It is an integral part of the monitoring of the student's performance during units 3 and 4, and it provides information which supplements the data based on the student's accomplishments on the CATs. Each student is given a Student Profile certificate by his or her high school at the end of the grade 12 year: This certificate reports on student performance in relation to the six work-related capabilities defined in Table 4. Information from this certificate may be used by higher education admissions officers and employers.

For each capability in the profile, a definition and a description of three levels of performance is provided (high, medium, low). Study teachers are required to structure activities consistent with the study design that would allow them to observe a student's capacities in relation to these skills. They are required to explain to the students from the outset which parts of the CAT work requirements will be used as a basis for Student Profile observations. Observations by each teacher are recorded on a grid, or in a notebook, and are discussed with the student. The final Student Profile is based on a summary description compiled on the basis of the cumulative judgments of all five study teachers. (pp. 27-33)

Table 3
Four CATs for Unit 4 of the Mathematics (Space and Number) Study *

Investigative project	The student will develop a project topic based on a theme: e.g., "Develop an equation to explain the periodic motion of the planets." The student will have four weeks to collect data and submit a written report, which will be assessed by his or her teacher. This assessment will be checked by a panel of teachers from other schools.
Challenging problem	The student will choose one problem from a list, e.g., "Sports and goal shooting—using angles, investigate the best point on the boundary line from which to shoot goals. Do this for a variety of sports." The student will have two weeks to research the topic, which will be examined in the same manner as the investigative report.
Facts and Skills task	This will be a one and a half hour exam, made up of 50 multiple choice questions. The test will be externally set and marked.

Table 4
Student Profiles -- The Six Capabilities

Initiative	Works independently from the direction of others, makes best use of learning opportunities, uses teachers and others as resources.
Self-management	Organizes effectively for work, sets own goals and priorities, manages time, and meets deadlines.
Cooperative work	Participates actively in defining goals and works cooperatively with others.
Adaptability	Responds positively to changing circumstances, and is able to modify original goals in new situations.
Reflection/Evaluation	Reflects on own work and is able to make constructive use of feedback or criticism to extend learning.
Communication	Able to communicate fluently in a number of ways and in a range of contexts, using spoken, written, and graphical methods where appropriate.

* Information in these tables is adapted from VCE: A Higher Education for Life, Victorian Curriculum and Assessment Board: Melbourne, 1992.

VII. The Certificates of Initial and Advanced Mastery and Their Standards

It is important for those in higher education in Oregon to understand the Certificates of Initial and Advanced Mastery mandated by HB 3565. This section presents a brief explanation of each, along with the performances required to attain each certificate.

A. The Certificate of Initial Mastery

The Certificate of Initial Mastery or CIM was envisioned as the capstone of the first 11 years of a child's education. Its purpose was to ensure that essentially all children were functioning at high levels of knowledge and skill by about age 16. In some discussions, the CIM has been presented as the new high school diploma, its goal being to accomplish by age 16 all that is achieved now by the graduating high school senior, and more.

To obtain a CIM a student must demonstrate "the capacity to learn, think, reason, retrieve information and work effectively alone and in groups" (HB 3565, Section 20). Additionally, students must have the "knowledge and skills to read, write, problem solve, think critically and communicate across the disciplines, at national levels by the year 2000 and at international levels by the year 2010" (HB 3565, Section 20). Assessment must include "a series of performance-based assessments benchmarked to mastery levels at approximately grades three, five, eight, and ten including but not limited to work samples, tests and portfolios . . . culminating in a project or exhibition that demonstrates attainment of required knowledge and skills" (HB 3565, Section 20).

The outcomes students must master have been adopted by the State Board of Education. They are organized into two groups, Foundation Skills and Core Applications for Living. They comprise the following:

Foundation Skills

- *Think critically, creatively and reflectively in making decisions and solving problems.*

- *Direct his or her own learning, including planning and carrying out complex projects.*

- *Communicate through reading, writing, speaking, and listening, and through an integrated use of visual forms such as symbols and graphic images.*

- *Use current technology, including computers, to process information and produce high-quality products.*

- *Recognize, process, and communicate quantitative relationships.*

- *Participate as a member of a team, including providing leadership for achieving goals and working well with others from diverse backgrounds.*

Core Applications for Living

- *Deliberate on public issues which arise in our representative democracy and in the world by applying perspectives from the social sciences.*

- *Understand human diversity and communicate in a second language, applying appropriate cultural norms.*

- *Interpret human experience through literature and the fine and performing arts.*

- *Apply science and math concepts and processes, showing an understanding of how they affect our world.*

- *Understand positive health habits and behaviors that establish and maintain healthy interpersonal relationships.* (December 1993)

B. The Certificate of Advanced Mastery

The Certificate of Advanced Mastery or CAM was developed at least in part to allay concerns that students would drop out after receiving their CIM at age 16. Its primary purpose is to encourage all students to begin to make choices about their future, and to validate the world of work as one source of educational experience for students. The CAM ideally will serve as a bridge or transition phase as the student moves from the common schooling experience, which culminates with the CIM, to one of several possible futures. The goal is to increase the probability that the student will be successful in this transition, whether it is to work, community college, higher education, or some other option. Students will be required to focus their studies in one of six "broad occupational categories." These categories are:

- *Arts and Communications*
- *Business and Management*
- *Health Services*
- *Human Resources*
- *Industrial and Engineering Systems*
- *Natural Resource Systems*

Preliminary standards for the CAM have been developed and have been adopted by the State Board of Education. These standards restate the CIM Foundation skills, and presumably extend them to higher levels of functioning. The CAM standards also add a number of "Advanced Applications" for living. The CAM standards presented to the State Board of Education in draft form January 5, 1994, are as follows:

Advanced Foundations

- *Think critically, creatively and reflectively in making decisions and solving problems.*
- *Direct his or her own learning, including planning and carrying out complex projects.*
- *Communicate through reading, writing, speaking, and listening, and through an integrated use of visual forms such as symbols and graphic images.*
- *Use current technology, including computers, to process information and produce high-quality products.*
- *Recognize, process, and communicate quantitative relationships.*
- *Participate as a member of a team, including providing leadership for achieving goals and working well with others from diverse backgrounds.*

Advanced Applications

- *Create and use knowledge; acquire, organize and express new knowledge showing a capacity to make distinctions and recognize complex relationships.*
- *Improve processes; analyze and improve complex processes which are designed to solve problems and achieve specific goals.*
- *Enhance the performance of systems; analyze systems components and interactions to design modifications which will enhance the performance of complex systems.*
- *Contribute to society; take responsibility for oneself, one's own learning and one's relationship with others.*

The program which educators ultimately design for the CAM must "facilitate the movement between the endorsements and shall encourage choice and mobility so as to enhance a student's opportunities to maximize exposure to the full range of educational experiences" (HB 3565, Section 25). The curriculum must include "opportunities for structured work experiences, cooperative work and study programs, on-the-job training and apprenticeship programs in addition to other subjects" (HB 3565, Section 28). The certificate must also include "a comprehensive educational component" (HB 3565, Section 25).

VIII. Issues in the Development of Proficiency-Based Admissions and Indicator Systems

There are a number of issues that must be considered in the development of a new approach to admissions as presented here. The complexity and challenge should not be underestimated. The following discusses some of those issues, considers pros and cons, and offers some possible strategies to demonstrate the feasibility of a proficiency-based admission system, while still acknowledging the attendant challenges and difficulties. Sections A through E discuss issues related to the development of an admission system; section F examines in a number of subsections the dynamics and challenges of developing the indicators themselves.

A. Reliability and Validity

The current admission system maintains an illusion of reliability through the use of standardized measures. However, as noted earlier, measures such as grade point average are not highly reliable across high schools nor are they highly valid indicators of student knowledge or skills in many cases. Similarly, course titles and Carnegie units do not, in practice, have high reliability. Schools vary both the content of courses and the actual amount of time devoted to instruction (versus time allocated) within any given course.

Proficiency-based strategies for admission, developed and constructed properly, will tend to enhance the validity of the data collected to determine a student's suitability for higher education. Most current measures are proxies for performance, and are at least one level removed from any academic task or skill. Furthermore, the tasks used to reach many of the judgments that contribute to current proxy measures are themselves suspect. Some measures assess extraneous skills such as test wiseness. Many may contain significant cultural and gender biases.

The potential advantage of increased validity through proficiency-based systems must be weighed against the difficulty of reaching acceptable levels of reliability. Such systems are vulnerable to differential interpretations of similar performance in the absence of rigorous quality control and training programs.

At the same time, some skills or processes may not be amenable to reliable assessment under any circumstance. Aesthetic judgment and appreciation are examples of areas in which the act of creating reliable assessment standards and strategies might compromise validity to such a point that the purpose of the assessment would be defeated.

B. Equity

As with all systems of standards, performance-based systems are susceptible to influences, conscious or unconscious, that bias the system. This danger is magnified when few people are involved in setting standards and assessments and many people are involved in administering the system.

Equity issues argue for widescale involvement in all aspects of the system and built-in monitoring devices designed to identify the system's effects on all groups. In contrast to current testing systems, if different groups are performing with vastly differing results, a proficiency-based system must confront this fact and examine its assessments and standards. Tasks that result in differential success are automatically suspect.

Furthermore, it is possible to allow students to demonstrate mastery in differing ways, depending on their cultural background. Some students feel particularly uncomfortable performing in front of groups as a result of their cultural heritage. Others come from cultures that value group work over individual contributions and performances. Still others must engage actively with a task to have success with it. Performance-based systems hold the possibility of mastery being demonstrated through any of a number of ways or formats. This provision can aid students who might be deterred by traditional testing methods, and can encourage teachers to design curricula that acknowledge the cultural background of their students, knowing that there is an appropriate assessment available through which the students can demonstrate mastery.

C. Quality Control

Perhaps the chief concern of university-based personnel is that quality cannot be maintained if traditional measures such as the Carnegie unit, the course title, and the grade point average are replaced by systems in which a significant amount of the responsibility for determining college readiness will be directly in the hands of the high school teachers. Ignoring for a moment the fact that the current system already endows these same teachers with the power to determine course content and to assign grades on whatever criteria they desire, there are still valid concerns that quality may suffer if high school teachers are given primary responsibility for assessing and certifying students as proficient in particular areas, especially if those proficiencies serve as admission (and in some cases advanced placement) criteria.

There are examples of states that have been able to address this issue satisfactorily. In Minnesota, the Postsecondary Options program allows high school students to enroll in college and university classes, and also encourages universities to offer classes for college credit at high schools. The results from this program have been positive. At the University of Minnesota, for example, approximately 1,500 students receive college credit, either on campus or at their home high school. This system has strict quality controls attached to it that make it acceptable to faculty members. There is a fulltime administrator who supervises and oversees every course offered off-campus for college credit, and who helps high school students who take classes on campus. There is even a center where these students can work or socialize. The result is that students in this program outperform students admitted through regular procedures.

D. The Mechanics of Mass Processing

Large state-run systems of higher education have developed efficient, cost-effective means for processing large numbers of applications. These procedures were subject to less scrutiny in an era when there was relatively less pressure for students to complete a degree program, and to do so in a timely manner. The reigning philosophy was that any dose of higher education was better than none. A diploma was nice, but students who did not receive one were assumed to have benefited nonetheless. Students taking five, six, or more years to graduate were merely "finding themselves." High rates of remediation were also acceptable in systems where admissions procedures had ceased to be a reliable reflection of student knowledge, but continued to be relatively successful as a social sorting mechanism.

The current expectations for higher education are changing. There are pressures to reshape public education to focus on the needs of individual students and to develop educational programs accordingly. Higher levels of high school completion push more students toward higher education. More adults need additional education. The non-traditional student is the norm in many places. The baby boom "echo" promises to increase the pool of applicants over the next ten years. Higher education capacity is not increasing in proportion to these demands. Legislatures nationally are scrutinizing higher education budgets holding them steady or reducing them in many states. These factors may combine to create pressures for alternatives to a mass processing system based on the assumption that all applicants have had similar educational experiences, and that assumes all applicants can (or should) be expected to demonstrate college readiness through the same instruments and processes.

The challenge is to find a way to balance the need to process thousands of applicants with a view toward what each student knows and can do, not just the amount of time they have spent in a seat. Any system of proficiency-based admissions must be able to take complex, authentic data and recode or reanalyze it into a format that allows decisions to be made at a distance from the actual assessment or learning environment. Admissions officers can never be expected to deal with each student individually, or examine highly complex and non-standardized data such as student writing portfolios, without some form of intermediate analysis.

This means that any system of mass processing will rely on teachers who are able to judge student work in relation to externally-developed standards, and who can do so with high degrees of reliability. Furthermore, it requires that most complex student performance data eventually be converted into numeric scores to allow for the aggregation of these subscores into a form that allows comparison among students on the basis of predetermined numeric ranges or cutoff points.

The challenge is to try to retain the texture of the complex data so that it is not lost entirely in the translation. This argues for a system in which an admissions officer would have access to supporting documents and examples of work that lead to the cumulative score. It argues for electronic transcripts that contain several levels of detail; an initial score, subscores, and electronically scanned exemplars of student work to support subscores. Such a branching hierarchical system would allow an admissions officer to probe deeper into cases in which a student is on the margins of admission, while not having to expend a great deal of time on those students who clearly are candidates for admission and those who are not. The result might be better decisions geared to individuals, but accommodated in an environment of mass processing.

Such a system is not a futuristic fantasy. Work is already well underway in a number of quarters to enable such a system. Oregon is well on the road to creating the SPEEDE/ExPRESS system. International Business Machine (IBM) is also doing extensive development work in this area, in partnership with Brown University in Rhode Island, a leader in school reform and recent recipient of a major Annenberg gift for school reform.

E. Cost

When the experiences of other countries are examined, there are indications that a movement to authentic assessment and a proficiency-based admission system would have increased cost. There are many variables in this equation, including the process of assessment development, the degree to which assessor and teacher training should be considered a new cost rather than another form of ongoing staff development, whether scoring of assessments will be done locally or by an external agency, the number of forms of each assessment that will be available, the frequency with which assessments will updated, and many other variables. It appears evident that at the very least there must be a reallocation of existing resources, particularly in the form of time for training and for scoring, if such a system is implemented.

It is possible to estimate the cost of assessment in other countries, which have highly-developed examination systems and, in many cases, extensive bureaucracies surrounding them. Madaus & Kellighan (1991) estimate the cost of examining a prospective graduate in Britain is $107 per candidate. If this rate of expenditure were applied to the state of Massachusetts, the cost of testing would increase six times. Victoria, Australia, with its extensive assessment procedures forming the basis of the VCE, expends in excess of $175 annually per student.

This type of assessment does not necessarily lend itself to economies of scale, although it may offer unanticipated side benefits that somewhat compensate for increased costs. Vickers (in press) indicates that the cost of assessment actually increases as more authentic forms of assessment are put into place. The cost of running the Victorian Curriculum and Assessment Board for approximately 60,000 twelfth-graders went from $10.5 million in 1991-92 to $13 million in 1992-93 as the new VCE was introduced. This amounts to a $37 per student increase to implement the more authentic assessment system above and beyond existing expenses. Most of the cost was associated with implementing an extensive teacher development program. Such development costs do provide double payoff, in the sense that "they probably did lead to overall improvement of the educational performance of schools" in Victoria (p. 35). Vickers contends that assessment systems that produce tougher tests while failing to invest in improved teacher skills are a "cruel hoax—by setting the hurdles higher without improving the training regimen they simply create more failure." (p. 35)

Costs can be contained, however. The European and Australian models rely on both centralized control and development along with the creation of considerable bureaucracy to administer the assessment system. If the planning for such functions remains centralized but their execution is highly decentralized, it is feasible to reduce costs substantially by incorporating these responsibilities into the existing system by rewriting job descriptions for select personnel and by utilizing *ad hoc* structures much more extensively.

In a time when departments of education are trying to redefine their role to take on more service and improvement functions, when regional educational service districts (ESD) are reorganizing, when central office staff are seeking to become better resources to those working at the school site, and when schools themselves are reexamining the roles of administrators, counselors, and teachers, it does not seem unreasonable to expect that the restructuring of these roles might lead to greater involvement in the creation and administration of systems of authentic assessment. Given the relative importance of this type of assessment as an organizer for instruction and motivator for students, it seems logical to expect that educational personnel will have a heightened interest in its development and use.

If this is so, it will be possible to reshape the existing system to take on many of these responsibilities without large amounts of new resources. Clearly some resources will be needed, some in the form of one-time development dollars, others dedicated to ongoing support of the program. There will be sources from which such resources might be reallocated, including existing testing programs. This organizational refocusing and restructuring combined with focused support and targeted resource reallocation might go a long way toward accommodating the demands which authentic assessments will place on the system.

F. Proficiency Indicator Development Issues

Proficiencies identify the framework of desired knowledge and skills. Using the proficiency indicator system, it is possible to develop detailed curriculum frameworks, lesson plans, and assessments. The indicators are only one step in the development of a program of study, however; significant additional work is required to spin out the indicators into courses and lessons. The indicators serve as guideposts and reference points for this subsequent development process, and for the creation of appropriate assessments to determine if the curriculum frameworks and courses of study result in student mastery of the indicators. The following sections consider some of the challenges associated with the development of the indicators themselves.

1. General vs. Specific

Indicators may be written in quite broad, inclusive language, but be so general that they provide little guidance to those who must set the performance levels and develop the assessments. Further, indicators that are too general are of little use to teachers who attempt to align their curriculum with them. Detailed lists of specific skills or knowledge can be highly informative, but tend to drive the system toward models of teaching in which complex tasks are taught and tested in small, isolated units. In the process the integrity of the field of study may be lost.

2. Concepts vs. Facts

It is often difficult to obtain a balance between desired knowledge of factual information and of foundational concepts that frame a field of study. Carefully-crafted indicators suggest or state the factual knowledge necessary for mastery. These facts should be essential building blocks for the discipline, those needed for further study, not a "laundry list" of dates, names, and terminology. An indicator system should identify important concepts that learners must master, often by applying factual information. These concepts establish the framework, or scaffold, upon which the study of the discipline or subject can be structured and presented.

3. Too Complex vs. Too Simple

An indicator system can easily become overwhelming in its complexity. There is a tendency to include a large number of statements in such systems. The advantage is that desired curriculum can be specified in greater detail. The disadvantage is that the system becomes unwieldy; there are too many elements for teachers and students to remember, and that must be assessed. In practice, over-complexity generally leads to abandonment of the system by teachers.

The challenge is to identify enough indicators to allow students to know what is expected of them, teachers to know what to teach, performance levels to be developed, and appropriate assessments to be developed. An effective indicator system must meet these four tests.

At the same time, meaning should not be sacrificed for simplicity. If the indicators do not convey the range of desired knowledge and skill at an adequate level of detail, this is also undesirable.

There will always be important knowledge and skills that are not stated explicitly. However, a well-developed indicator system either implies or requires their mastery (if the indicators are constructed in a manner that mandates mastery of terminal or capstone skills and knowledge). Prerequisite knowledge may not be stated but must be mastered nonetheless.

4. Disciplinary vs. Interdisciplinary

Although the proficiencies are organized by disciplinary areas, it is still possible to construct indicators that imply or require interdisciplinary knowledge, study, or assessment. Often demonstrating mastery requires students to apply concepts and knowledge across disciplinary boundaries. Indicators can compel linkage and integration among various content areas;

they need not cause isolation of knowledge into disciplines, even if the discipline is used as the organizer.

5. **Content vs. Process**

   Indicator systems are designed to be more sophisticated and integrated than behavioral learning objectives, which were often stated in terms of specific demonstrated knowledge of discrete curricular elements. Proficiency indicators may contain reference to content knowledge, skills, or concepts, as well as to cognitive capabilities and social learning skills. Learners may be expected to know specific information and to show mastery of complex cognitive processes and behaviors.

6. **Past vs. Future**

   There is a strong tendency to select indicators that reflect knowledge or skills needed historically in a particular discipline or field of study. The challenge is to blend those elements that are constants with those likely to be important for success in the future. Although it is often difficult to anticipate future needs, it may be possible to discern or extrapolate emerging knowledge and skills within a discipline.

7. **Entrance vs. Major**

   The proficiency indicators presented in this report will serve to determine admissibility to the State System of Higher Education. Therefore, the standards established will apply to *all* students seeking admission as freshmen. It is important to discriminate between the knowledge and skills needed (or desired) for entry into a major, and those needed by the general population of entering freshmen. Care should be taken to avoid creating requirements that exclude groups of students who would be otherwise qualified for admission except for a proficiency that might bear little relation to their course of study once they enter higher education. Similarly, it is tempting for content area experts to describe what they would like a student who enters their major to know and do. This level of knowledge may not be an appropriate expectation for all entering freshmen.

8. **Reinventing the Status Quo vs. Improving the System**

   It is possible to develop indicators that appear quite challenging to those who develop them, yet result in little change or improvement at the classroom level. Any set of standards to which the average high school teacher might react by saying, "Yes, I already do all of that; I don't need to change much of what I do," is probably not descriptive or challenging enough to fulfill its purpose. The proficiency indicators should be constructed in a way that will clearly result in significant change in secondary schools, leading to significantly enhanced student knowledge and performance.

PART THREE:

OUTLINE AND DESIGN FOR PROFICIENCY-BASED ADMISSIONS IN OREGON

IX. Standards for a Proficiency-Based Admission System for OSSHE

This section presents the proposed proficiencies that would serve as the framework for further development of a proficiency-based admission system. The proficiencies are broken into two categories: content and process. For each category, a definition is presented, followed by a brief rationale, the relationship of the Certificate of Initial or Advanced Mastery to the category, and the proposed proficiency areas and indicators.

These areas and indicators have been developed after an exhaustive process of gathering reports on recommended standards from national content area organizations, the federal government, various states including Oregon, and other organizations engaged in standards development.[4] More than 60 documents were analyzed and synthesized to provide an overview of the standards that are being developed for a number of subject areas. These analyses along with excerpts from the source documents were sent to selected faculty members from all campuses in the State System for their review and comment. Approximately 80 faculty were asked to participate and to construct either extended definitions or proficiency indicators, or both, for a particular proficiency area. These contributions were processed by PASS project staff, and presented to participants at two work sessions (December 9, 1993, to develop extended definitions; January 7, 1994, to develop proficiency indicators). Approximately 25 of the 80 selected faculty attended these work sessions; others sent contributions for consideration at these sessions. The products from these two sessions were combined with the results from the analysis of standards documents to formulate the recommendations that follow.

These recommendations should be considered a template for further development and refinement of proficiencies. The process conducted during the past six months has yielded a thoughtful and useful framework that demonstrates how a proficiency-based admission system might be structured. It does not substitute for the time-consuming process of involving diverse groups and constituencies in a review process designed to refine this template and to enhance ownership of it.

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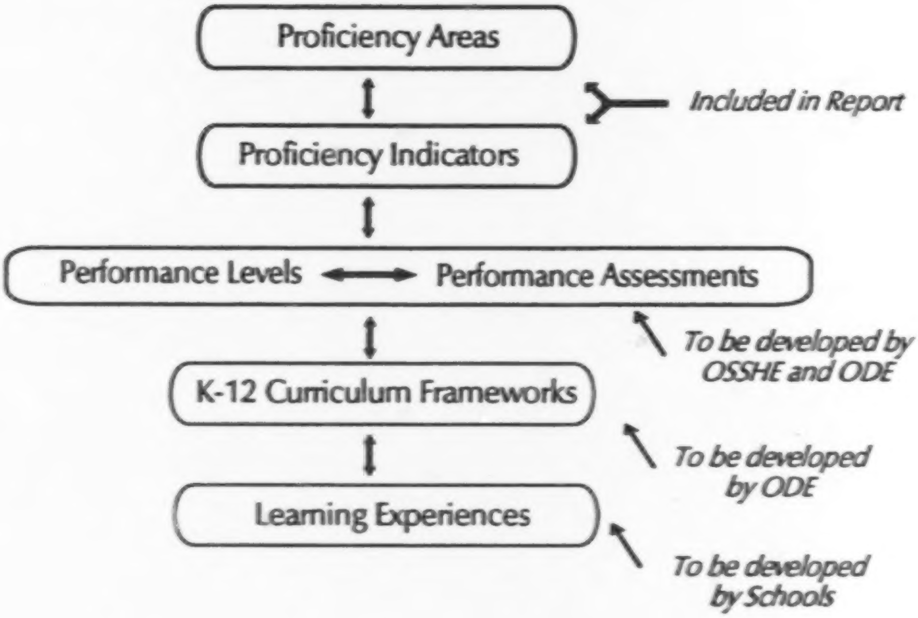
[4] See Appendix C for a complete listing of the standards documents that were analyzed.

Furthermore, Oregon Department of Education staff engaged in school reform have indicated that a general list such as this will be entirely adequate at this time for them to proceed with planning of the Certificates of Initial and Advanced Mastery. The staff members understand that there is a need to continue to refine these proficiencies over the next six to nine months. Such a process could be coordinated with the joint development of specific performance levels and assessments by Department of Education and higher education staff. This can be accomplished in a way that does not materially affect the timelines for developing and implementing the certificates.



Proficiency Areas
Included in Report
Proficiency Indicators
Performance Levels
Performance Assessments
To be developed by OSSHE and ODE
K-12 Curriculum Frameworks
To be developed by ODE
Learning Experiences
To be developed by Schools

The proficiency areas and indicators presented in this report should be considered a starting point for the thorough, systematic reconstruction of the curriculum, instruction, and assessment to which the college-bound student is exposed. Proficiencies provide the framework within which the next steps can be taken toward a redesign of the K-12 educational system, and toward the goal of improved student performance for a changing world.

A change of this magnitude will require a commitment to ongoing discussion and adaptation over a period of time as the implications of a proficiency-based system are thoroughly analyzed. The following sections offer a carefully-constructed starting point from which such a process might be initiated.

This report divides the discussion of proficiencies into the areas of content and process. This is a somewhat arbitrary distinction. Content does not exist in the absence of cognitive processes that integrate it into the mind; and these intellectual and cognitive processes do not exist separate from content. The OSSHE approach to proficiency demonstration will integrate content and process thoroughly in the performance levels and assessment methods that will be developed to ascertain proficiency. Content and process proficiencies are being presented separately here primarily for the sake of clarity to make it easier for the reader to identify both the subject matter students will be expected to know, and the ways students will be expected to demonstrate mastery of the intellectual processes necessary for success in higher education.

A number of the process proficiencies appear with some consistency in the descriptions of the content proficiencies. These include, most prominently; reading, writing, oral expression, use of technology, problem solving, and critical thinking. It is assumed that the process requirements will be integrated thoroughly into all content areas.

A. Content Proficiency Areas

1. Sources for Proposed Content Proficiency Areas

a. National Reports

As noted in Section IV, considerable work is being undertaken nationally to develop standards in almost every academic discipline. The proposed OSSHE recommendations for content proficiencies are congruent with the general thrust of the national goals development process at the federal level.

Although these goals are still being developed, early reports indicate the degree of alignment that exists between Oregon's proposed proficiencies, and the emerging federal standard areas. The National Educational Goals Panel released in mid-November 1993, its report outlining the subject areas for which national standards development was recommended (Viadero, 1993). The subjects are math, science, geography, history, civics, foreign languages, English, and the arts. These correspond quite closely with the OSSHE recommendations.

The OSSHE recommended proficiencies are also congruent with the specific recommendations contained in reports from national organizations identifying the specific content of national standards. As noted, these reports have been analyzed and reviewed during the proficiency development process.

The content standards include excerpts or paraphrases from a number of these reports, ensuring that the standards developed for admission into the Oregon State System of Higher Education will keep the doors open for students interested in applying elsewhere, as well as ensuring Oregon students are pursuing state-of-the-art content knowledge keyed to emerging national standards.

One note of acknowledgment should be included here. During the process of analyzing documents, soliciting input from faculty members, and synthesizing and editing the results of each step, excerpts and paraphrases from various reports have become inextricably embedded in the recommended proficiencies. Therefore, some of the specific proficiency statements will closely resemble statements contained originally in another report. It is not always possible to attribute directly a particular proficiency to a particular source. OSSHE acknowledges the valuable contributions from all of the standards documents that are listed in Appendix C, and notes that specific contributions may not be attributed to specific source documents.

b. Content Standards Contained in HB 3565

HB 3565 addresses a number of content areas primarily in Section III, which states that "It is the intent of the Legislative Assembly to maintain a system of public elementary and secondary schools that has the following characteristics:

- *High degree of mastery of mathematics*
- *High degree of mastery of science*
- *Background in social studies*
- *Background in foreign languages*
- *Background in humanities*
- *Background in visual arts*
- *Background in performing arts*
- *Background in literary arts*
- *Knowledge to succeed in world of work*
- *Knowledge to succeed as members of families*
- *Knowledge to succeed as citizens of a participatory democracy*. (excerpted and paraphrased from HB 3565, Section 3)

The proposed OSSHE admission standards acknowledge the importance of addressing the goals of HB 3565 by constructing proficiencies that closely reflect these desired outcomes of the public educational system.

A comparison between proposed OSSHE proficiencies and adopted CIM standards is contained in Section XIII.

c. Areas Missing or De-emphasized in CAM

The current proposed standards for the CAM take the Foundation Skills from the CIM and reproduce them intact, with the assumption that these skills would be assessed at a higher level of performance. The CAM standards then add four "Advanced Applications" which are to be demonstrated by students in the context of the particular strand they select from among the six available. These proposed standards omit several areas that many would consider important for all students seeking admission to higher education. The CAM proposes to address these omissions by requiring these content areas (science, for example) in particular strands. Of the six strands, for example, there might be, for example, an emphasis on science in four. In this design students with an interest in science would choose one of these four strands.

The OSSHE proficiencies assume that all entering students must have certain levels of knowledge in a variety of areas. This is at the heart of the notion of a liberal education, an underpinning of the American public higher education system. While it is possible that some students might attain acceptable levels of content knowledge in some areas by the time they receive their CIM, OSSHE's earlier proposal to make the CIM the basis for admission into higher education was not embraced by the Department of Education. Therefore, the issue of how to ensure that all students attain an acceptable level of knowledge across a broad range of subjects and disciplines remains. The proposed OSSHE content proficiencies address this issue by ensuring that all students, regardless of occupational interest, enter college with a broad educational background. A comparison of the OSSHE standards and the proposed CAM standards is included in Section XIII.

d. Current Admission Requirements

The proposed content proficiencies are highly congruent with current admission standards, adding one requirement, and restating one existing requirement. These proficiencies use the language of the disciplines, a language familiar and important to those in higher education. However, this terminology should not be assumed to be an endorsement of curriculum that is segregated based on these disciplinary labels. These disciplinary distinctions become arbitrary at some point. The lines blur between, say, science and math, or between social studies and humanities. These proposed proficiencies serve to create an overall framework that describes an educated person. The emphasis should be on the person, not on the distinctions between disciplines. It is not critical, nor is it particularly useful, to concentrate on strictly delineating the sphere of each content proficiency. Each contributes to the others. The student blends and combines them as she or he applies new knowledge and skills to real-world situations.

The area being added is the Fine and Performing Arts. The requirements in this area are modest when compared with the other five areas. This requirement is being added to emphasize the value of the arts in the development of all young people. Arts programs are at greater risk with the implementation of budget cuts caused by Measure 5. In addition, the CAM appears to limit the arts primarily to the Arts and Communication strand. The net effect of these forces on a student entering college who was interested in, say, engineering, might be that the student would have had a predominantly technical education throughout K-12 schooling. Such a model of education neglects key elements of human development from which even those who have no intent of entering the arts can benefit. A specialization approach at the precollegiate level has more in common with European educational systems than American traditions. The inclusion of the Fine and Performing Arts helps ensure that all college-bound students have at least some exposure to these dimensions of human culture.

The second area in which some changes relative to current admission standards are being recommended is English. This area is being restated as the content area of Humanities/Literature, and the process areas of Reading, Writing, and Oral Communication. The rationale for this restating of the requirement is that English as taught currently has had the unfortunate effect of tending to segregate literacy from the rest of the curriculum. Writing, for example, is often limited to the English class. Most writing then occurs out of context. Students may develop excellent narrative writing skills but never develop expository styles needed to explain and report knowledge and conclusions in content areas. Teachers outside of English often feel little responsibility to integrate writing into their subject areas. The proposed restructuring of the English requirement will emphasize writing across the curriculum as well as a clear focus on humanities and literature.

Literature has been an additional area of some concern. Many students arrive at higher education with little apparent experience reading complex or classic texts. This restatement and increased emphasis on literature is designed to help ensure that more time is spent on literature by college-bound students. The humanities requirement supports this goal, while encouraging interdisciplinary studies with an emphasis on the role of literature in other disciplines.

The following section presents the proposed content proficiencies. For each proficiency area an extended definition is presented first. This definition provides a clearer understanding of what is encompassed in this field of study. Following the extended definition is a list of proficiency indicators. As noted in Section IV, proficiency indicators provide a detailed specification of the knowledge and skills that are desired, and form the basis for developing performance levels and assessments. It is expected that students will demonstrate mastery of all indicators (with the exception of the area of Fine and Performing Arts, as will be noted).

There is considerable room (and need) for the high school curriculum to be designed in ways that integrate the knowledge contained in these areas, and that rethink the relationship among these disciplines. Each area can be a tool for teaching or applying the concepts of any other. It is the intention of the State System of Higher Education to encourage high-quality interdisciplinary and cross-disciplinary studies in ways that lead to higher levels of student comprehension and retention of the knowledge base within each discipline.

2. Definition of a Content-Based Proficiency

A content proficiency is defined as a body of knowledge with an information base, rules, laws, or principles that constitutes a generally recognized discipline or subject. It is assessed through demonstrated mastery of the structure and content of desired knowledge and skills, and by the application of knowledge to real-world problems.

3. Proposed Content Proficiency Areas:

a. Math

Extended Definition: Mathematics is a form of communication that complements natural language as a tool for describing, defining, expressing, and answering questions about the natural world. Mathematics is a compact, carefully defined symbolic language that facilitates modeling, solving, and communicating problems from a wide variety of disciplines, not only science and technology. Much of its utility derives from the power of abstraction, the ability to generalize and then apply constructs to particular problems. Mathematics is the science of logical reasoning and of pattern identification. It is a mode of inquiry that provides fundamental insights into the order of our world. Learning mathematics is a dynamic endeavor involving the acquisition of skills, processes, and concepts. Numeric, algebraic, and geometric concepts are fundamental vehicles for developing competence in mathematics. The processes of problem clarification, deduction of consequences, formulation of alternatives, and development of appropriate tools are as much a part of the modern mathematician's craft as solving equations.

Proficiencies:

1. Apply integrated mathematical problem-solving strategies to problems from within and outside mathematics including but not limited to: modeling (tables, graphs, finding and expressing patterns); guess and check; expressing relationships as equations/inequalities; selecting and applying appropriate technologies for problem solving.

2. Express mathematical ideas orally and in writing by using appropriate mathematical terminology and/or symbols; read, understand, interpret, and evaluate mathematical expressions of ideas and written presentations of mathematics.

3. Follow and judge the validity of arguments including but not limited to: direct and indirect proofs, and proofs using mathematical induction; formulate and test conjectures (e.g., make generalizations from observations); draw logical conclusions from given/known information.

4. Recognize the connections among mathematical areas (e.g., geometry and algebra) and to other disciplines by using mathematics in other subjects.

5. Use computation, estimation, and proportions to solve problems; use estimation to check the reasonableness of results, especially those obtained by technology.

6. Use algebraic operations and mathematical expressions to solve equations and inequalities including but not limited to exponentials and logarithms.

7. Use patterns and functions to represent and solve problems; understand functions as relationships between inputs and outputs; understand connections among symbolic, graphic, and tabular representations of functions; interpret functions in terms of rate of change and relative maximums and minimums.

8. Represent problem situations with geometric models and apply properties of figures; be able to visualize geometric figures in two and three dimensions; use analytic geometry to solve problems.

9. Understand and apply measures of central tendency, variability, and correlation; understand sampling and inference and their roles in statistical claims; create and interpret discrete probability distributions; understand the role of probability and statistics in various disciplines and the real world.

10. Represent problem situations using discrete structures such as finite graphs, matrices, sequences, recurrence relations, linear programming, and differential equations.

11. Understand the conceptual foundations and applications of calculus and trigonometry and their relationship to other areas of mathematics and other disciplines.

b. Science

Extended Definition: Science is a systematic process for producing the knowledge necessary to comprehend the natural world. It is concerned with investigating and understanding natural phenomena and processes. Natural and physical sciences include physics, chemistry, biology, geology, and ecology. The evaluation and interpretation of data are critical as science requires absolute verifiability for any information or concept to be held true. The study of science focuses on critical thinking and logical reasoning. Science does not simply involve the memorization of facts and formulas. It requires an understanding and investigation of concepts in order to verify them through experiments. It is through scientific inquiry that students are able to view science as an interdisciplinary study applicable to the real world.

Proficiencies:

1. Use writing, speaking, reasoning, and mathematics to recognize and state scientific problems.

2. Design an experiment using principles of scientific inquiry. Collect and analyze data pertaining to a natural phenomenon or problem. Communicate the results in a way that can be understood clearly. Critique experimental designs, including those that do not appear to work.

3. Organize, analyze, and draw logical conclusions from data gathered in the field and the laboratory.

4. Determine when a given conclusion is supported by data or observation.

5. Use technology for scientific research including the use of computers for data collection, data analysis, graphic display, and literature searches. Recognize the limitations of these technologies.

6. Understand unifying concepts of the life and physical sciences including but not limited to: cell theory, geological evolution, organic evolution, atomic structure, chemical bonding, ecological relations, biodiversity, and transformation of energy.

7. Understand and correctly apply basic scientific concepts, principles, and terminology including but not limited to the following topics:

    - rotational motion, angular momentum, fluids, thermodynamics, simple harmonic motion, electricity and magnetism, quantum physics.

    - geology, properties of the earth, solid earth processes, biological processes, hydrological processes, atmospheric processes.

    - chemistry including states of matter, structures of matter, solutions, reactions of matter, energy changes, equilibrium, kinetics, periodic classification.

    - biology including molecular and cellular aspects of living things, structure and function in plants and animals, genetics, evolution, plant and animal diversity, principles of classification, ecological relationships.

8. Read and critically evaluate the accuracy of information and claims presented in popular and science-oriented magazines. Demonstrate awareness of the implications of the information and the claims presented for the individual and society.

9. Recognize how scientific discoveries, ideas, and applications affect human society and culture.

10. Consider the moral, ethical, and philosophical implications of scientific research and discoveries.

c. Social Sciences

Extended Definition: The social sciences focus on a wide diversity of social relationships, group arrangements, and human understandings that characterize human affairs over time and throughout the world. They include the study of social, economic, political, and cultural events as well as appropriate content from the humanities, fine arts, mathematics, and sciences. They offer concepts and methods for studying social events and processes at global, national, regional, local, and individual levels. The scope of the social sciences ranges from examining the mental processes of the human mind to the distribution of human beings on this planet, from understanding the functioning of human society to the causes and effects of technologies, from problem solving in small groups to the use of power internationally. Understanding the social sciences includes knowledge of theories regarding societal and group functioning, appreciation of the uses of empirical data, awareness of how the careful study of contextual events explains the important influences that shape human life, and how this information can be used to address current issues.

Proficiencies:

1. Compare, contrast, argue, interpret, and analyze orally and in writing social science concepts in ways that identify the strengths, weaknesses, and evident perspectives.

2. Distinguish fact from opinion when discussing or writing about social, economic, political, and cultural problems; apply these skills to current events using data gathering techniques including the oral interview and primary source documents.

3. Illustrate the interactions and interrelationships among local, regional, national, and international social, political, cultural, and economic events; discuss ethical values and individual responsibility in relation to such events.

4. Understand the historical evolution and philosophical basis of the United States government, its current configuration and operation; the relationship of the states to the federal establishment; patterns of democratic participation in the American political scene; the structure of power, authority, and governance; the role and responsibilities of citizenship; the Bill of Rights and the notion of conflicting rights as evidenced in the modern American political scene.

5. Exhibit knowledge of the chronological flow of events, and identify the major themes and dynamics of historical change in human society from prehistoric through contemporary periods.

6. Use geographical concepts including topography and climate to understand contemporary social, economic, political, and cultural issues; identify major world and national geographic entities including countries, cities, land, and waterforms in context; manifest an understanding of the role of geography in history.

7. Explain the structure and functioning of various economic systems, their geographical distribution, relationship to national and international political and social systems, and the underlying conditions that influence the selection and adaptation of such systems.

8. Understand the dynamics of human behavior individually, in groups, and in social-cultural contexts; understand psychological concepts including theories of human personality development and the individual; appraise the role and impact of culture and ethnic diversity within a society and between societies.

9. Use mathematical and statistical operations to analyze social science problems and to construct and interpret graphs, charts, maps, and tables; identify and use appropriate technologies to assist with these tasks.

10. Analyze and pose potential solutions to complex societal problems; identify social, political, economic, scientific, and other dimensions of the problem, and the relationships among these dimensions; employ a wide variety of data sources and perspectives, including literature and the arts to understand these problems.

d. Foreign Languages

Extended Definition: Foreign language study comprises the four skill areas of speaking, listening, reading, and writing. Within these skill areas, communicative competence is attained through mastery of linguistic functions, supported by grammatical structures, lexical items, and awareness of different registers (e.g. formal and informal); a concern for accuracy, including native-like pronunciation, structural precision, and socio-linguistic appropriateness; and knowledge of culture, a complex phenomenon that includes recognition of and ability to execute linguistic and paralinguistic behaviors, knowledge of societal norms and institutions, and appreciation of artistic and intellectual achievements. Cultural knowledge, ranging from everyday culture to a civilization's literary and artistic monuments, has an important role to play, not in isolation, not as a separate entity, but rather as an integral part of all foreign language study. Foreign language learning is a long-term and cumulative process that provides a springboard for critical and analytic thinking, for insight and understanding of human diversity, and for a deeper appreciation of the wealth that a variety of cultures bring to the world.

Proficiencies:

There are no proficiencies for foreign languages included in this report since OSSHE recently initiated a separate project to develop proficiencies in this area. Planning for this project began before the mandate to develop proficiencies was issued by the State Board of Higher Education in July 1993. The project brings together foreign language educators from public and private baccalaureate institutions and community colleges, school districts, and the Department of Education.

OSSHE and ODE have established Foreign Language Proficiency Committees in four languages: Spanish, French, German, and Japanese. Other language committees will be constituted next year. Committees have been asked to complete draft proficiency standards by late spring 1994, then to address assessment approaches. Committees first met November 29, 1993, and have been meeting in December and January, with additional meetings scheduled for February and March. Additional review will be conducted by statewide review groups made up of K-12 foreign language teachers and higher education faculty who indicated a previous interest in being included in this process. Approximately 100 people will serve on these review groups.

The recommendations that result from this process will apply to students seeking admission in 1997-98 (prior to proficiency-based admissions proposed in all areas for students seeking admission in 1999).

e. Humanities/Literature

Extended Definition: Studies in humanities and literature explore the human experience through historical, linguistic, cultural, philosophical, and literary lenses. Students, teachers, scholars, and authors study what it means to be human by engaging in ongoing dialogue, inquiry, and reflection. Thus, it is not possible to "master" humanities, only to enhance one's level of thought regarding the human condition. What may be learned are habits of the mind that will enable lifelong acquisition and critique of knowledge.

Proficiencies:

1. Recognize the ways in which language, history, culture, and tradition shape our character, assumptions, and society.

2. Read texts of varying length and complexity including but not limited to: a broad selection of classical, contemporary, and multicultural literature; poetry, novels, essays, short stories, and drama; full length works of fiction and non-fiction.

3. Analyze, discuss, react to and consider literature about various groups and cultures including but not limited to: women and men; racial, ethnic, and cultural groups; diverse socio-economic backgrounds; various belief systems; religious, political, and social entities.

4. Understand and analyze literature's significance to one's own life.

5. Understand and analyze texts and other media including but not limited to videos, recordings, and performances, through personal and critical response, while distinguishing between the writer's views and the reader's opinions and interpretations.

6. Demonstrate the relationship of literature to other subjects.

7. Recognize and appreciate literary elements and terms including but not limited to, the use of stylistic, sensory, figurative, semantic, and logical attributes.

8. Interpret a writer's inferential and literal meaning.

9. Understand how historical and social contexts and biographical, and thematic background influence literary expression.

f. Fine and Performing Arts

Extended Definition: Fine and performing arts are the cultural repositories of the qualitative dimension of life through the ages. They are also the contemporaneous expressions of the human condition. The fine arts serve both to improve the quality of life, and to stimulate the senses in ways that enhance creativity and problem-solving in a variety of disciplines beyond the arts. Study in music, theater, dance, and visual arts involves history and appreciation, analysis and aesthetics, interpretation and criticism, and performance and production. These content areas are concerned with the capacity for individuals and society to communicate and to receive ideas, information, and feelings in a variety of media. The fine and performing arts prepare one to work both independently and cooperatively and develop one's ability to make independent, critical judgments.

Proficiencies: [Note: Students are required to demonstrate proficiency on any two of the following four proficiencies.]

1. Discuss and interpret works of art from different times, cultures and peoples through a process of critical analysis that shows a reasoned understanding of their context and aesthetic principles. This ability will be demonstrated through written composition, in conjunction with oral and technologically-based presentations.

2. Demonstrate awareness of the role the arts play in society and how the arts empower people to create images, artifacts, performances, and structures which manifest their beliefs, knowledge, social relationships, values, and skills.

3. Express artistic ideas through the creation, production, or performance of a musical composition, an art object, a dramatic production or interpretation, or a dance.

4. Analyze, critique, and evaluate an art object or event by specifying its components and processes, showing how these elements characterize the object or event and how they convey its artistic merit.

B. Process Proficiency Areas

The second area of proficiency encompasses intellectual and social processes. Broadly speaking, these are thinking and learning skills of varying description. Some involve the ability to interact with other people successfully as a means to understand or apply knowledge. These processes are generic; they are not specific to a particular content area, and do not exist separate from their application to a body of knowledge or experience.

The processes are specified differently from the content areas. Following the definition and rationale sections, each process proficiency will be presented with an accompanying extended definition. However, there are no numbered proficiencies. The process proficiencies will not be assessed separately from content areas. It is not the intent of OSSHE to assess these skills except in the context of content areas.

Detailed specification of indicators may be counterproductive, if they become a checklist for assessment. The act of specifying exactly what critical or creative thinking is, for example, may have the effect of destroying it. Similarly, problem solving should not be taught as an algorithm or series of steps, but should be developed by solving many complex and challenging problems, and drawing lessons from these experiences. It may be useful at some later date to produce more detailed descriptions of the elements of these processes to assist teachers and students in understanding the dimensions of each proficiency, but may become problematic if they are adopted and incorporated too formally or rigidly into the assessment system. The proficiency-based admission system proposed here will seek to ensure that these intellectual and social learning skills are mastered by developing assessments that require high levels of proficiency in these areas, assessments that view these processes in the context of the learning situation as a means to an end.

1. Rationale for Proposed Process Proficiency Areas

a. National Reports

Two national reports in particular have influenced the work done by school districts and states to identify desired intellectual and social skills all students must be expected to master. Both of these reports were commissioned by the U.S. Department of Labor and are designed to address the types of skills needed to succeed in the workplace. However, even a cursory examination reveals the degree to which these skills apply more broadly than the work place. Given the relative influence these reports have had on educational policy makers and educators, their recommendations are worth noting.

OSSHE notes the dangers in gearing undergraduate education in the direction of worker preparation. An important distinction was made in Section VI by Vickers (in press) between work preparation and work readiness. An undergraduate education is not generally the place for direct work preparation. However, work readiness encompasses a more generic set of skills, many of which can be applied successfully in both the academic and work environments. Helping students become ready for work by developing lifelong learning skills and habits of the mind is certainly not inconsistent with the OSSHE mission.

The first report, *Workplace Basics: The Skills Employers Want* (Carnevale, 1992), outlines seven different skill strands:

- *Learning to Learn*
- *The 3 R's (Reading, Writing, Computation)*
- *Communication: Listening & Oral Communication*
- *Creative Thinking/Problem Solving*
- *Self-Esteem/Goal-Setting-Motivation/Personal & Career Development*
- *Interpersonal/Negotiation/Teamwork*
- *Organizational Effectiveness/Leadership (p. 9)*

The second document, *What Work Requires of Schools: A SCANS Report for America 2000* (Secretary's Commission on Achieving Necessary Skills, 1991), identifies five competencies and a three-part foundation of skills and personal qualities that the Commission describes as necessary "for solid job performance." The most important process skills from among these recommendations include the following "foundation competencies:"

- *Basic skills: Reading, writing, arithmetic and mathematics, speaking, and listening.*

- *Thinking skills: Thinking creatively, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, and reasoning.*

- *Personal qualities: Individual responsibility, self-esteem, sociability, self-management, and integrity.* (p. viii)

Some of these are clearly beyond the scope of the traditional undergraduate education. Many in higher education worry about concepts such as "leadership," "self-esteem," or "seeing things in the mind's eye" being included as admission requirements. It is not OSSHE's intent to construct proficiencies that incorporate such vague constructs, or that stray from the traditional goals of an undergraduate education.

At the same time, some of the recommendations in these reports are not inconsistent with what many in higher education say they are attempting to develop in students currently. Problem solving, creative thinking, individual responsibility and self-management, communication skills, even teamwork in an increasing number of academic settings; all of these are seen by many as important skills students develop during their college education. The OSSHE proficiencies are not specifically built on these reports. It is simply worth noting that OSSHE's proficiencies are not inconsistent with some of the recommendations contained in these two reports and are, in a number of areas, congruent with them.

Many of the educational reformers working to bring about changes in secondary schools emphasize the importance of these process skills. Specifically, the emphasis on improved student thinking is evident in their recommendations.[5] These proposed proficiencies acknowledge the increased emphasis on intellectual processes, most commonly critical thinking, and acknowledge their importance to the admissions process, thereby encouraging their development by students. Much of the school reform movement has had as an overtone the enhancement of student thinking abilities. OSSHE supports this direction, and will use process proficiencies to help do so.

b. Standards Emerging from School Districts, States, and OSSHE Projects

Numerous school districts are developing performance standards. Most of these efforts result in a set of statements weighted heavily on the side of intellectual and social processes. To help inform the work of the Certificate of Initial Mastery Task Force, Conley (1991-92) analyzed the standards a number of pioneering school districts and other educational organizations had developed. He found the following process standards being cited frequently by those developing performance-based approaches:

- *Teamwork: Working with others to create products, solve problems, or reach conclusions in ways that utilize all members of the group.*
- *Problem-solving: Applying information to real-world problems in ways that demonstrate understanding of both the problem and the information needed to solve it.*
- *Use of information: Selecting and evaluating from among diverse information sources to reach a conclusion (to include information technologies as a source).*
- *Self-esteem: Demonstrating positive sense of self through actions, decisions, and accomplishments.*

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[5] See, for example, Sizer, Theodore (1991). No Pain, No Gain. Educational Leadership. 48(8), 32-34, May; Sizer, Theodore (1992). A Working Design: The Coalition of Essential Schools and Re: Learning. In A Leader's Guide to School Restructuring: A Special Report of the NASSP Commission on Restructuring. Reston, Virginia: National Association of Secondary School Principals; Marzano, Robert (1992). A Different Kind of Classroom: Teaching with Dimensions of Learning. Alexandria, Virginia: Association for Supervision and Curriculum Development; Willis, Scott (1992). Teaching Thinking: Educators Shift from Recall to Reasoning. Curriculum Update. 1-2, 4-8, June.

- *Goal-setting: Identifying, developing, and achieving realistic personal goals.*

- *Community involvement: Functioning as a contributing member of a community.*

- *Career awareness: Demonstrating awareness of career options as they relate to personal abilities and interests.*

- *Creativity: Creating original solutions and pieces of work, combining existing information or works to create new outcomes.*

- *Communication: Using language in all its forms along with other means of visual communication to convey complex ideas, solve problems, express feelings.*

- *Quality work: Producing work of a consistently high quality; understanding the elements of quality.*

- *Systems awareness: Demonstrating understanding of natural, social, organizational, and technological systems, and the relationship of the individual to such systems.*

- *Integrative thinking: Using or combining information from across a variety of disciplines in an integrated fashion to demonstrate understanding of the world to solve problems or create products.*

The Shared Perspectives Project, a joint effort between University of Oregon faculty and public school teachers, identified a number of skills that project participants agreed span all the content areas examined in their report. Those common abilities are:

- *Students will demonstrate the ability to read and comprehend written material.*

- *Students will demonstrate the ability to speak and write in a style that is clear, credible, and convincing, and that reflects their own thinking.*

- *Students will demonstrate the ability to secure information from a variety of sources (e.g., libraries -- including computerized technologies, oral communication, and non-verbal sources) and to organize and evaluate that information in a useful way.*

- *Students will demonstrate the ability to use critical thinking skills to define and solve problems, postulate theories, develop arguments, and otherwise manipulate information productively.*

- *Students will demonstrate the ability for original and creative thinking by producing unique communications. These communications may be in a variety of forms, verbal or non-verbal.* (University of Oregon, 1993, p. 6)

c. Process Standards Contained in HB 3565

HB 3565 contains reference to a variety of intellectual and social skills that all students should master. These references are contained in Section III, and at various places elsewhere in the Act, including in the descriptions of the requirements for the Certificates of Initial and Advanced Mastery. These skills include:

- *Problem-solving*
- *Critical thinking*
- *Communicating*
- *Capacity to learn*
- *Think*
- *Reason*
- *Retrieve information*
- *Work effectively alone*
- *Work effectively in groups*
- *Function successfully in a democracy*
- *Function tolerantly in a democracy*
- *Function in a multicultural world*
- *Succeed in the world of work*
- *Succeed as family members*
- *Take responsibility for decisions*
- *Make appropriate choices*
- *Reading*
- *Writing*
- *Listening*
- *Speaking*

The proposed OSSHE process proficiencies are highly congruent with these desired skills and behaviors, as noted in the comparison between OSSHE proficiencies and CIM and CAM standards in Section XIII.

d. Congruence with CIM

For students to develop the types of habits of thinking, reasoning, and interacting necessary to meet high standards in the proposed intellectual processes, these skills must be developed throughout the students' school careers. These cannot be achieved between ninth and twelfth grade if the foundation for them (and much of their development) has not already been addressed. Therefore, it is important first to compare these standards with those in the CIM, since the CIM focuses on grades K-10. There is, in fact, near-complete congruence between the OSSHE process standards and those adopted for the CIM. Such congruence is important if students are to develop the essential skills and attitudes toward knowledge and learning that are essential for success in higher education. A comparison of the CIM standards and the proposed OSSHE standards is presented in Section XIII.

2. Definition Of Process-Based Proficiencies

A process proficiency describes intellectual or social skills or capabilities consisting of attitudes, behaviors, strategies, or techniques that may be applied in a wide range of learning situations and to a wide variety of content knowledge in ways that enable, enhance, and enrich the learning process.

3. Proposed Process Proficiency Areas:

a. Reading

Extended Definition: Reading is the process of decoding abstract symbols in order to understand their latent message or meanings. Effective readers employ a variety of strategies to monitor their comprehension, to self-correct, and to discover meaning in many types of text. A fluent reader can interpret a writer's literal and inferential meaning, recognize the differing goals of different types of writing, use all of the features of a written document (e.g., tables, index, appendices, footnotes), vary the method of reading (skim, review, survey, analyze), and make connections between texts and personal experiences. Reading is undertaken for a variety of reasons, including enjoyment, information acquisition, comprehension, and critical analysis.

b. Writing

Extended Definition: Writing is a tool for communication with others, which also entails self-reflection. Writing may serve to inform, stimulate, and challenge any aspect of the reader's psyche. It involves both description and expression. The writer is compelled to organize and clarify her or his thinking so that it is comprehensible, informative, moving or entertaining to others when read. Writing has both a content and process. The content comprises a series of conventions including grammar, syntax, spelling, structure, and voice which must be understood and mastered. The writing process contains a number of dimensions, or steps, including prewriting, drafting, organizing, revising, editing, and critiquing. Effective writers employ a variety of written forms (e.g., stories, essays, journals, technical reports, poetry, research papers), and can evaluate, monitor, and critique their own writing to produce a coherent and mechanically correct final product.

c. Oral Expression

Extended Definition: Oral expression includes both the skills of listening and speaking. Competent oral expression is complex. It comprises the ability to ask clarifying and extending questions, express generalizations discovered through investigations, debate, persuade, initiate and sustain conversations, present feelings and emotions, share and exchange ideas and opinions, give directions, and critique oral presentations. It involves verbal and non-verbal behaviors, and the ability to employ and to decode each appropriately.

d. Critical/Analytic Thinking

Extended Definition: Critical and analytic thinkers use a series of strategies to ensure that the conclusions they reach are logical and reasonable. They can apply deductive and inductive thinking, make and test conjectures, follow logical arguments, judge the validity of arguments, construct simple valid proofs, understand and apply reasoning processes, develop appropriate criteria for analyzing data or opinions and distinguishing fact from belief, identify cause and effect, and respond to multiple perspectives. Critical and analytic thinking is developed and employed in all areas of study, from the fine arts to mathematics.

e. Problem-solving

Extended Definition: Problem-solving is a series of skills, some systematic, some intuitive, that are developed over time as the result of attempting many complex, non-standardized problems. Problem solving may be inductive, deductive, or non-linear. Effective problem solvers employ many of the following techniques: identify the critical elements of the problem; develop multi-step solutions in a non-routine fashion; generalize familiar solutions and strategies to new problems and situations;

generate alternative solutions and strategies for familiar problems and situations; conduct systematic observations and investigations to collect data; consider the policy implications and unintended effects of proposed solutions.

f. Technology as a Learning Tool

Extended Definition: Technology is used to store, analyze, present, interpret, process, create, and communicate information for a variety of purposes. To master technology as a learning tool means coming to view any technology as an extension and enhancement of the human mind, not as a separate mechanical system. While there is a content to learning how to use any form of technology, the more important skill is that of integrating the technology appropriately into the process of inquiry, understanding, and production of knowledge. The skill of technology utilization includes knowing how to operate and when to employ computers, online databases, telephones, fax machines, electronic mail and bulletin boards, and calculators; audio-visual and multimedia tools, including video cameras and recorders, projection systems, LCD panels, CD-ROMs, sound recording devices, and slide projectors. There is a hardware and software dimension to many technologies. Competent learners master both, with greater emphasis on the potentialities of the software dimension.

g. Systems/Integrative Thinking

Extended Definition: A system is a regularly interacting or interdependent group of items, concepts, or structures which form a unified whole. A system may take many forms including social, economic, or political organizations; doctrines, ideas, or principles; societies or social arrangements; or natural organisms and phenomena. Systems thinking requires an understanding of the interactions within, between, and among natural, social, organizational, and technological systems, and the relationship of the individual to such interactions. Systems thinking uses or combines information from across a variety of disciplines in an integrated fashion to demonstrate understanding of the world, and to solve problems or create products. Systems thinking requires the ability to synthesize and integrate information and observations from the parts to form a new pattern or framework for comprehending the whole or for solving a problem.

h. Teamwork

Extended Definition: Teamwork encompasses the social dimensions of learning and doing. A learner who is proficient at learning socially can work with others to create products, solve problems, or reach conclusions in ways that utilize all members of the group; cope with conflict and negotiate; understand the diversity present in any group and how it affects performance and goal attainment; demonstrate an understanding of the various roles present in groups; show the capacity to lead and follow, depending on the situation; understand the balance between individual and group contributions and responsibilities; understand both individual and group accountability; and show awareness of the role and potential uses of humor when people work together.

i. Quality Work

Extended Definition: Quality is the relative degree of excellence present in a work as compared to defined standards or criteria. Quality work may be evaluated along any of a number of dimensions, including its content, structure, presentation, insights, conclusions, or entertainment value. Quality work demands students capable of comparing their work continuously to internal and external standards. A quality ethos within a school encourages discussion of the nature of quality, the identification of standards, and of the critique and evaluation of products as they are being developed, and when they are completed.

X. Design of the Assessment System

The assessment system will be the key means for determining higher education admission eligibility. In this model, OSSHE would be responsible for overseeing the development of assessments that would serve as the basis for admission decisions. The development would be done in consultation with the Department of Education, under the supervision of OSSHE.

Assessments for admission into higher education would be keyed to content areas. Intellectual process standards would be assessed in the context of their application to challenging content. A variety of methods and assessments over time would be utilized to reach a determination about each area. All assessment methods would be convertible into aggregate scores that would allow for comparisons among applicants and a final judgment regarding admission for students who apply to higher education.

A. Relationship Between Assessment Method and Performance Level

The assessment system required to link the CAM and OSSHE's proficiency-based admissions process will be complex and adaptive. This can be accomplished by making two types of distinctions: between situations where the same assessment can be utilized for the CAM and OSSHE admission, and those where assessments will be different; and between situations where the performance levels can be the same, and those where performance levels will be different. These possible combinations are represented in the following grid:

Table 5
Interaction of Assessments and Performance Levels

	Same Assessments	Different Assessments
Same Performance Level	Model 1	Model 3
Different Performance Levels	Model 2	Model 4

The ability to make distinctions of this nature will allow considerable variation in the instructional program school districts are able to offer, since ODE and OSSHE will be specifying assessments not curriculum. The various combinations of assessments and performance levels will allow learning experiences to be constructed in any of a number of configurations as long as these experiences prepare students at the proper level for the required assessment. Furthermore, this approach will provide many opportunities for students to move between a professional/technical and a college preparatory emphasis simply by preparing for the appropriate assessment, not by repeating a series of courses. This approach allows parts of each system to be independent. It does not require that every CAM standard be included in the OSSHE requirements, nor that every OSSHE proficiency be demonstrated in order to be awarded a CAM. It does encourage significant congruence between the two, along with educational experiences in which diverse student interests and goals can be accommodated. To help illustrate how this assessment system might operate, brief examples of each of the four models are presented.

1. Model 1: Same Assessment, Same Performance Level

An example might be the standard for teamwork. It seems reasonable to assume that both the CAM and OSSHE might be able to agree on the same means for demonstrating proficiency or mastery, along with the same components, or level, of proficiency or mastery.

2. Model 2: Same Assessment, Different Performance Levels

This model might be represented by the area of mathematics, where both systems might agree to the same set of assessment tasks, but OSSHE might require a higher level of performance extending beyond real-world applications of mathematical concepts to more extended explications and applications of the principles and concepts underlying these assessments, and perhaps some additional mathematical knowledge. The highest level of performance might lead to advanced placement credit being awarded.

3. Model 3: Different Assessments, Same Performance Levels

This model might be demonstrated in the area of technology (or foreign languages), where some students would acquire their skills in work-based settings, others in classroom environments. Each group might have similar levels of performance, but would need different assessments in order to demonstrate their knowledge and skills. This model accommodates assessments that are adapted to the learning environment within which a skill is learned, while maintaining comparability of mastery or proficiency.

4. Model 4: Different Assessments, Different Performance Levels

This model applies in situations where the CAM standard and the OSSHE proficiency are completely separate. In some cases there are elements of each system that are entirely non-comparable. These elements require completely different assessment methods and, accordingly, different performance levels. An example might be the CAM standard for evaluating factors that build interpersonal relationships and the OSSHE proficiency in the fine arts. These areas are mutually exclusive and unrelated, so there is no way to count one system's assessments toward the other system's requirements in these areas.

B. Other Aspects of the Assessment System

The assessment system used to determine college admission will be summative in nature. In other words, it will serve as the culminating measure of the student's K-12 education. Although summary in intent, this does not mean that the measures need be unidimensional nor that there will be only one opportunity for students to demonstrate proficiency. Students might begin taking versions of the college assessments earlier to gauge their readiness. Or, having taken a college assessment and done poorly, a student might prepare further, then take another version at a later date. In the same way that a student can retake the SATs, this assessment system will provide multiple opportunities for students to demonstrate readiness for higher education. The advantage this approach offers to students over the current grade, credit, and course-based system is that they can recover from a bad semester or year if they commit themselves to focused preparation for the relevant assessments. They can also move through the material at their own pace and not be required to spend a year in a class studying for a proficiency for which they can demonstrate adequate performance after several months.

Students will be familiar with these assessments because they will have experienced similar ones from the early grades on. This system will provide students with ongoing formative feedback throughout their education. HB 3565 established "benchmarks" at grades three, five, and eight where students will be able to determine their performance in relation to the CIM summative outcomes. By the time students approach the college proficiency assessments, they will be familiar and comfortable with this type of assessment and will have considerable knowledge of their likely performance in the areas being assessed, including comprehensive experiences with Initial Mastery certification.

Throughout the K-12 years, the emphasis will be on formative feedback not judgment, so that assessments will provide useful information regarding strengths and weaknesses to the child and parent on a continuing basis. The notion of assessment as a summary score will only gradually gain importance, allowing the child to adjust to the increasing stakes associated with assessment, both for higher education and professional/technical programs. This integration of assessment into the child's educational program will help avoid the pressure-packed system of examinations from which many countries are currently moving away. In this proposed system, students will be able to determine when their scores are submitted to the institution of higher education, doing so when they have reached the level of performance desired (or required).

Since assessment will consist of complex context-based tasks, no two will be exactly alike. Students will be able to repeat them and learn from their mistakes, without simply memorizing answers. They will have to develop and master the critical skills and knowledge underlying the task in order to improve their performance on the assessment.

C. Role of the SAT and ACT

There likely will still be a role for academic aptitude tests such as the SAT and ACT for several reasons. First, these tests are actively engaged in redesign processes that will move them in the direction of proficiency assessment and context-based learning. Second, there will still be value in having a nationally norm-referenced measure for comparison purposes. This allows judgments for policy purposes and enables students to apply for out-of-state institutions. Third, these tests have never been of primary importance in making admission decisions in Oregon. They are a secondary and often a tertiary measure. Grade point average, class standing, and completed courses have all been more important than the SAT. It is likely that the SAT and ACT will have a similar role in the new system.

Notably, academic aptitude tests were developed in large measure in response to the results of the Eight Year Study (Tyler, 1986-1987), which found that students from high schools with no required program of college study, where teachers were encouraged to experiment with course structure and content, did better in college than students admitted from schools where the program of study was approved by the college. These aptitude tests were supposed to encourage greater diversity in the high school program, not standardization as seems to have been the case (Tyler, 1986-1987). The OSSHE plan would attempt to utilize aptitude tests in their historically proper role.

These tests are also being revised to reflect the changing expectations for and definitions of an educated student. Both the SAT and ACT have launched major redesign projects aimed at acknowledging changing assessment practices (Bartels, 1993; College Board, 1993b; College Board, 1993c; College Board, 1993d). As noted earlier, the SAT will incorporate an open-ended writing requirement (College Board, 1993c). The ACT is working to devise methods for analyzing student portfolios and making the data from portfolios available for admission decisions (Bartels, 1993). OSSHE has been contacted by representatives of the ACT who have expressed a willingness to assist in the development of a proficiency-based admission system. Their goal is to help determine the appropriate role of their test, and what adaptations might be necessitated if states move to proficiency-based admission systems.

D. Content-Specific Tests Administered by OSSHE

One additional possibility is for OSSHE to offer its own content tests which it designs and administers. There are advantages and disadvantages to this approach. However, it remains an option which might be appropriate in certain areas. Such an approach allows closer control by OSSHE, but at the cost of decontextualizing learning to a greater degree. An advantage or disadvantage (depending on one's point of view) is that standardized content tests will tend to standardize the high school curriculum. The best example of this is in those Canadian provinces that employ provincial exams. High school teachers gear their courses to these exams, and student performance on the exams in some provinces is reported by school (and even by teacher). This has a powerful standardizing effect. This approach has also encouraged high schools to be resistant to change. High schools in British Columbia appear to have embraced little of the province's Year 2000 education reform program, due at least in part to higher education's insistence on the preservation of the provincial exams in their current form.

Content tests might be fruitfully employed for placement purposes, and within majors. Such tests would provide guidance for high school students who knew they planned both to enter college and to pursue a particular major. These tests would not be required for admission, but might help a student avoid an introductory sequence of courses, if the student could demonstrate mastery of course concepts and knowledge on a test. Advanced Placement tests serve a similar purpose currently, and might continue to fill this role.

E. Out-of-State Students

Implementation of a proficiency-based system in Oregon could result in a discontinuity between what is expected from in-state and out-of-state applicants. It is likely that some form of dual system would be in place for a period of time, one capable of accommodating students with traditional transcripts written in terms of Carnegie units and GPA.

This may be less of a problem in the future than it appears to be from the present perspective. A number of states are moving to re-examine college admission requirements and their relation to school reform. It is not inconceivable, with systems as large as the State University of New York examining proficiency-based admission schemes, that there may be considerable variation nationally by the time Oregon fully implements this system.

Furthermore, it may be possible (and desirable) to require out-of-state applicants to provide some evidence of proficiency in areas such as writing, mathematics, foreign languages, and some of the process areas like problem solving. Many high schools are becoming more conversant with techniques such as portfolio assessment, and are implementing programs such as senior capstone projects. These learning experiences yield data that could rather easily be structured to demonstrate proficiency. It might not be unreasonable to expect all applicants to submit evidence of a particular level of skill in writing. Out-of-state students might pay to have their portfolio analyzed, while in-state students might have this done in their high school at no charge.

Interstate transfer issues should not be overlooked; however, they should not preclude investigation and development of a proficiency-based admission system. Rather, careful attention should be paid to identifying the issues such a system raises as applied to students from other states who wish to attend Oregon institutions of higher education.

XI. Quality Control Issues

Many of the assessments being described in this report will need to be conducted in high schools and be administered by teachers in those schools. As noted earlier, this type of system is in place in the state of Victoria, Australia, and elements of this approach are employed in various European systems. Still, the challenge will be to ensure that there is one standard of performance statewide on each and every OSSHE proficiency.

Some express concern when it is suggested that high school teachers should conduct assessments related to college admission. Colleges currently rely on grades from these same teachers as a primary determiner of admission, and that there are no clear, consistent standards in place for the granting of these grades. High school teachers do, in fact, make decisions regarding who is admitted to college by the grades they give. This system would emphasize the creation of the clear, consistent standards currently lacking, and would move the standard from time spent in class to demonstration of learning.

A. Achieving and Maintaining Uniform, High Standards

How can this goal be achieved? Oregon is fortunate in that there are only approximately 250 high schools in the state, not thousands as in neighboring states. This scale creates the possibility of offering training to, say, a math teacher from every high school in the state, and conducting it in a moderate-sized hall. Furthermore, the concentration of population along the Willamette corridor further simplifies the task of training teachers somewhat. The availability of ED-NET training (statewide interactive educational television network) is another likely training enhancement.

Two additional factors supporting this approach are the reorganization of Education Service Districts (mandated by Senate Bill 26), from 29 to 15 ESDs statewide with a charge to focus on curricular support for their member schools; and the consolidation of school districts from nearly 300 currently to 176 by 1995.

Also worth noting are changes in the Department of Education's regular quality control visits to schools districts. These visits will focus on CIM and CAM assessment practices in order to maintain the integrity of these certificates. The Department's visits and the heightened sense of accountability around assessment such visits might create, could provide one other factor supporting high-quality school-based assessment. These various factors in total will tend to create a new atmosphere surrounding school-based assessment, one concerned with adherence to standards.

B. Monitoring Quality

A random sample of approximately ten percent of Oregon high schools could be selected each year for detailed analysis of their testing and scoring procedures. If there were significant discrepancies between scores awarded and the judgment of an external review panel, the school could first be put on probation, with the possible loss of its ability to certify college proficiency for its students. If it were to lose such certification, the school would be required to contract externally for assessors who were certified by OSSHE to conduct and score student assessments. The political damage attendant to such a sanction would likely be adequate to limit abuses of the system.

A second form of quality control could also be employed. Students' progress in introductory college courses would be analyzed. If students from particular high schools consistently failed any of these courses at a rate greater than the general student population, these schools' assessment practices would be examined in greater detail, perhaps triggering a site visit. This is not an unreasonable approach since a system of common standards should result in comparable student success rates.

The assessments themselves, and the performance levels within each assessment, would be adjusted on a continuing basis to keep pace with developments in each discipline and to incorporate lessons learned from previous assessments. Changes of this sort would allow teachers to adapt their curriculum incrementally to accommodate changes in assessments. Rarely would they be expected to radically redesign curriculum.

C. The Training Model

Attaining high degrees of assessor reliability is a necessary dimension of this model. Other states (Vermont, for example) have begun instituting statewide assessment training for teachers. There is a history of such training in the area of writing, where a number of states have successfully instituted statewide writing assessments. Victoria, Australia, as noted in Section VI, routinely trains and retrains teachers to achieve high degrees of reliability in assessment scoring. A quality training process to ensure reliability, while challenging, appears to be possible based on experiences observed elsewhere.

One promising approach is the "train the trainer" model. Once performance levels and assessments are determined, a team of higher education and Department of Education personnel would design the training procedures. This group of designers would be composed of people with acknowledged expertise in assessment design and staff development. Next, initial groups of carefully-selected personnel from ESDs, large school districts, OSSHE institutions, the

Department of Education, state curriculum organizations, and perhaps district consortia would attend intensive training sessions, resulting in their designation as "master trainers." This pool of trainers would be authorized to train regional, district, and school-level trainers, as well as to conduct onsite training for teachers. Regional trainers would be a link between higher education and school sites. Most regional trainers would be teachers, central office personnel, and ESD support staff, but might include private consultants as well.

High school teachers from all Oregon high schools would then be eligible to be trained in the use and scoring of assessments. It is possible that only a subset of all teachers in a high school (or in a particular academic discipline) would be trained. These teachers would have a special role in their school as the designated assessor for OSSHE proficiencies. Schools with larger proportions of students going directly to higher education could be expected to have a larger number of teachers certified as assessors. The training itself would be accomplished through intensive yearly scoring sessions, or verification panels, combined with on-site follow-up training and monitoring. High inter-rater reliability would be developed, measured, and maintained through such procedures.

Assessments would be scored by teachers using rubrics or other scoring methods, such as project rating forms and portfolio analysis templates. Paper and pencil tests would likely continue to be one method of assessment. HB 3565 requires that other assessment methods be utilized in addition to tests, including work samples, demonstrations, and portfolios.

There are clear implications for the way school districts think about teacher work load allocation. Some teachers might take on more responsibility for conducting and scoring assessments as a part of their teaching assignment. The school calendar might be reconfigured to provide time for assessment, in much the same way that many high schools have long had "final exam" schedules. This is part of the educational restructuring process. Change of this magnitude cannot be expected to occur with everyone continuing to do everything they do now in exactly the same ways they always have.

XII. Making a Determination and Managing the Process for Admission

Once such a system is designed and assessors are trained, the next challenge would be how to take the complex and often voluminous data that this system of assessment generates and convert them into a form that allows for comparisons to be made between students and against a fixed standard.

The results of the various proficiency-related performance assessments would be converted into numeric scores and totaled. Other additional measures such as SAT scores, might continue to be employed, as noted above.

The admission process would be transferred to electronic media. New electronic transmission systems would allow supporting or illustrative material to accompany the raw assessment scores. Several pieces of student writing, a letter from a teacher or community member commending a student's performance demonstration or project (or explaining a particularly poor performance), a student's self-assessment of goal achievement, even a brief video clip, might be included in the supporting material that accompanies the basic numeric scores.

Such data would allow admission officers to make better determinations regarding those students whose performance profile was marginal, or for whom there were performance anomalies. The ability to digitize text and video information (possible with current technologies, and feasible in the next few years) will simplify the process of examining "authentic" elements of student performance without being overwhelmed by raw information, as might be the case if confronted with the students' entire portfolio from their high school years.

This system might also allow electronic advising. Sophomores or juniors might be able to determine if their performance is admission-level if they are in doubt, rather than waiting one or two years to find out. They might receive advice about what to do next to prepare for college. Admissions officers might be able to make "real-time" decisions regarding marginal or special admission students, who might then have more time to improve performance in required areas. An assessment could be given, scored, and forwarded to the admission officer in a matter of a few days for a preliminary determination to see if the student had now met the standard for admission.

Class standing will cease to be a meaningful statistic unless new ways of computing it are developed. Comparing student aggregate assessment scores will mean little if scoring is standardized across institutions. A "4" on an assessment in Ontario could be expected to be very similar to a "4" on the same assessment in Astoria. Comparisons would be with all Oregon applicants, not one's local peers.

XIII. How OSSHE Proficiencies Will Relate to the CIM and CAM

The K-12 system will have its own set of requirements and assessments for CIM/CAM. In some cases, higher education proficiency assessments will serve to meet both CIM/CAM requirements and higher education requirements. Students could take assessments other than the higher education assessments and still receive the CIM/CAM.

The OSSHE assessments will be designed in a fashion that allows them to be used by students whenever possible to meet CAM (and in some cases perhaps CIM) requirements. This dual use of assessments is critical to mitigating concerns that students will be "tracked" into college- or workforce-bound programs. Students not interested in pursuing a college education might take different assessments to meet CAM outcomes in some areas.

At the same time, students with different educational goals could conceivably share a substantial number of instructional experiences and still prepare for different assessments. The challenge will be for the public schools to design programs that allow, encourage, and support students with diverse educational goals working together in environments that are appropriately challenging for all students. Differentiated assessments can permit this approach to occur.

For example, there may be 12 areas where mastery must be demonstrated to receive a CAM. Of these, a student preparing for admission to higher education in Oregon may need to demonstrate mastery in nine. On these nine, the student would have to demonstrate mastery on an assessment designed and approved by OSSHE. These nine would count toward both the CAM and demonstrating proficiency for admission. To receive a CAM the student would also have to demonstrate proficiency on the other three standards using assessments and standards designed by the Department of Education. The interplay between assessments and performance levels was also considered in Section X.

It is conceivable that some students will come directly to higher education without a CAM. In this sense, the CAM is not the equivalent of the high school diploma. Students will be ready for admission when the State System of Higher Education certifies that they are, based on their performance on specified proficiency assessments.

OSSHE proficiency standards listed above have been referenced or "crosswalked" to CIM/CAM standards to show the relationship. There is relatively high congruence between the two sets of standards, although each system uses different language or labels to identify various performance areas, and there are significant standards for college admission that are lacking in current CAM standards.

Table 6
Comparison of Adopted Standards for Certificate of *Initial* Mastery (CIM) and Proposed Proficiency Areas for College Admission *

CIM Standards	OSSHE Proficiency Areas
Think critically, creatively and reflectively in making decisions and solving problems.	Problem-solving Critical/Analytic Thinking
Direct his or her own learning, including planning and carrying out complex projects.	Quality Work
Communicate through reading, writing, speaking, and listening, and through an integrated use of visual forms such as symbols and graphic images.	Reading Writing Oral Expression
Use current technology, including computers, to process information and produce high-quality products.	Technology (Mastery of)
Recognize, process, and communicate quantitative relationships.	Math
Participate as a member of a team, including providing leadership for achieving goals and working well with others from diverse backgrounds.	Teamwork
Deliberate on public issues which arise in our representative democracy and in the world by applying perspectives from the social sciences.	Social Sciences
Understand human diversity and communicate in a second language, applying appropriate cultural norms.	Foreign Languages
Interpret human experience through literature and the fine and performing arts.	Humanities/Literature Fine/Performing Arts
Apply science and math concepts and processes, showing an understanding of how they affect our world.	Science Math Systems/Integrative Thinking
Understand positive health habits and behaviors that establish and maintain healthy interpersonal relationships.	(Science, Social Sciences?)

Above black line = Foundation Skills
Below black line = Core Applications for Living *

- * It is possible that each CIM standard may correlate with more OSSHE proficiency areas than those listed in the corresponding box, which represent primary correlations.

Table 7
Comparison of Proposed Standards for Certificate of *Advanced* Mastery (CAM) and Proposed Proficiency Areas for College Admission *

CAM Standards (January 6, 1994 draft)	OSSHE Proficiency Areas
Think critically, creatively and reflectively in making decisions and solving problems.	Problem-solving Critical/Analytic Thinking
Direct his or her own learning, including planning and carrying out complex projects.	Quality Work
Communicate through reading, writing, speaking, and listening, and through an integrated use of visual forms such as symbols and graphic images.	Reading Writing Oral Expression
Use current technology, including computers, to process information and produce high-quality products.	Technology (Mastery of)
Recognize, process, and communicate quantitative relationships.	Math
Participate as a member of a team, including providing leadership for achieving goals and working well with others from diverse backgrounds.	Teamwork
Create and use knowledge.	Critical/Analytic Thinking Technology (Mastery of) Systems/Integrative Thinking
Improve processes.	Systems/Integrative Thinking Problem-solving Teamwork Math
Enhance the performance of systems.	Social Sciences Critical/Analytic Thinking Systems/Integrative Thinking
Contribute to society.	Social Sciences (Science?) Systems/Integrative Thinking
	Science Foreign Languages Humanities/Literature Fine/Performing Arts

Above black line = Advanced Foundations (same as CIM, but higher level)
Below black line = Advanced Applications (specific to each of six strand areas)

* It is possible that mastery of the Advanced Applications will be demonstrated through a variety of content areas. Only the most likely possibilities are listed here.

A. Student Performance Profiles

Students may utilize personal records on which they track their progress toward the CIM/CAM. They will be able to identify the degree to which they have met admission proficiencies as they continue work on their profiles could serve as a convenient means for standardizing academic advising across the state. The following chart is a sample representation of how students might track their progress toward the CAM and OSSHE admission. In practice this process might be somewhat more complex, as students would have to track progress on the indicators that comprise each proficiency area.

Table 8
Example of How Students Might Track Completion of CAM and OSSHE Requirements

CAM Standards	CAM Assessment Completed	OSSHE Standards	OSSHE Assessment Completed
Think critically, creatively and reflectively in making decisions and solving problems.		Problem-solving Critical/Analytic Thinking	
Direct his or her own learning, including planning and carrying out complex projects.	✓	Quality Work	✓
Communicate through reading, writing, speaking, and listening, and through an integrated use of visual forms such as symbols and graphic images.	✓	Reading Writing Oral Expression	✓
Use current technology, including computers, to process information and produce high-quality products.	✓	Technology (Mastery of)	✓
Recognize, process, and communicate quantitative relationships.		Math	
Participate as a member of a team, including providing leadership for achieving goals and working well with others from diverse backgrounds.	✓	Teamwork	
Create and use knowledge.		Critical/Analytic Thinking Technology (Mastery of)	✓
Improve processes.		Systems/Integrative Thinking	
Enhance the performance of systems.		Social Studies Critical/Analytic Thinking Systems/Integrative Thinking	
Contribute to society.			
		Science Foreign Languages Humanities/Literature Fine/Performing Arts	✓ ✓ ✓ ✓

Above black line = Advanced Foundations; Below black line = Advanced Applications

B. Allowing Student Movement Between College Preparatory and Academic Professional/Technical Emphases

The performance profile could provide students the information necessary to determine their progress toward both a CAM and college admission. It could allow students to shift to a college preparation emphasis simply by completing the requisite assessments, even if she or he had been taking primarily an "applied" course of study up to that point.

While students who change emphasis to college preparation would have to demonstrate the required proficiencies for college admission, there is no reason they could not do so in less time than would be required to take an entire sequence of courses in order to meet an admission requirement.

Similarly, a college-bound student might decide she or he wanted to spend some time in a hands-on, applied environment before completing preparation for college admission. This student would be able to depart from college-bound courses to explore other learning experiences, and return to college preparatory assessments at a later time. Having missed a course in a sequence will not necessarily prevent a student from mastering the material through a variety of other means. Foreign languages would be one example, where a student might master a language through a work-based experience interacting with non-English speakers.

Assuming that the CAM curriculum will be highly challenging for all students, the gap between the college-prepared and the vocationally-prepared student will narrow. In principle, it will be easier for students to decide to change to the college preparatory endorsement, and be able to demonstrate their proficiency after some intensive work specifically designed to bridge the gap between the academic professional/technical curriculum and the college preparatory assessments. This latter assumption, although important, remains untested.

XIV. Implementation Plan and Timeline

The following sections present a brief description of proposed activities needed to design this system. This outline should be considered tentative and subject to change.

A. Present Report to OSBHE [January 1994]

This report was presented to the State Board of Higher Education on January 28, 1994, and was endorsed as a policy direction.

B. Work Collaboratively with Department of Education [Ongoing]

Formal mechanisms for regular meetings between OSSHE and Department of Education staff related to implementation of this proposal will be established. It will be particularly critical for the two systems to collaborate on the development of the CAM assessment system and the curriculum frameworks.

C. Continue Review of Program [Spring 1994]

Activities will be initiated in the spring of 1994 to continue to gather reactions from OSSHE campuses, K-12 educators, and other interested parties. The proficiency indicators will be refined based on continuing input and analysis. Initial work will begin to identify unanticipated problems and to design solutions or make appropriate modifications within the policy framework approved by the State Board of Higher Education in January 1994.

D. Develop Assessments [Summer, Fall 1994]

Appropriate assessments will be created by contracting with experts within and outside OSSHE who have expertise in performance assessment; working in tandem with the Department of Education on CAM and CIM assessment development; and obtaining examples and materials from other states and agencies involved in performance assessment. Given the amount of development work being conducted currently in this area, there should be a relatively large pool of examples and materials available to assist this process.

E. Begin Pilot Testing [Winter, Spring 1995]

Pilot testing of indicator/assessment system will begin as products come online. At least three high schools will be designated as pilot sites no later than Winter, 1995. These sites will serve as laboratories for the development and field testing of assessments, and other elements of the system, to allow potential problems to be identified.

System-level implementation will follow the CAM timelines. CAM programs will be implemented in districts statewide by 1997-98. The first students to participate in CAM programs for two years will complete in 1998-99. Therefore, full-scale implementation of proficiency-based college admissions should be accomplished by 1999.

Piloting efforts can be expected to be conducted continuously, and, to the degree possible, in concert with CAM development projects sponsored by the Department of Education.

It is possible that the move to proficiencies might begin earlier in some areas. Foreign languages proficiency-based admission will be implemented in 1997-98; it is conceivable that this date could be accelerated or that other areas could be added if development work proceeds ahead of schedule. It is the intent of OSSHE to move as far as possible toward proficiency-based admission practices, based on the lessons learned during the development and piloting process.

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APPENDIX A

ALL SOURCES UTILIZED IN THE PROJECT

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APPENDIX C

STANDARDS DOCUMENTS ANALYZED

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